

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

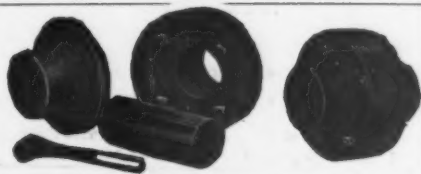
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Reading Matter Contents.....page 1109  
Alphabetical Index to Advertisers " 185  
Classified List of Advertisers " 177  
Advertising and Subscription Rates " 184



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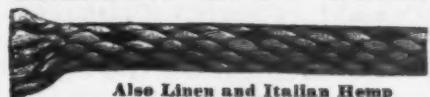
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Ad. on page 15.



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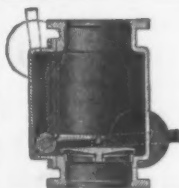
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RIVERSIDE, N.J.**









# THE IRON AGE

New York, Thursday, October 25, 1906.

## A Model College Engineering Building.

**The New Building for the Civil and Mechanical Engineering Departments at the University of Pennsylvania.**

The importance to which the engineering profession has attained is in no way more strikingly evidenced than by the remarkable advance which has been made, particularly in the last decade, in engineering education the world over. Technical schools and colleges are vying with each other to provide the best courses, the best instructing talent and the best mechanical facilities, so much so that it perplexes the student to select the institution which can offer him the most. The engineering department of the University of Pennsylvania at Philadelphia, established in 1874, has three times been obliged to move into larger quarters, due to the constantly in-

creasing size of the classes. At one time the leading member of the great sugar refining firm in Philadelphia established by his family, Mr. Harrison has practically underwritten the cost of all the recent buildings and has repeatedly paid out of his own funds such deficits as have been unavoidable.

Arthur L. Church of the class of 1878, chairman of the Dedicatory Committee, presented to the provost the following candidates for the honorary degree of Doctor of Science:

Marie M. Henri Vetillart, a leading French civil engineer.  
Alexander Mackenzie, chief of engineers, U. S. A.

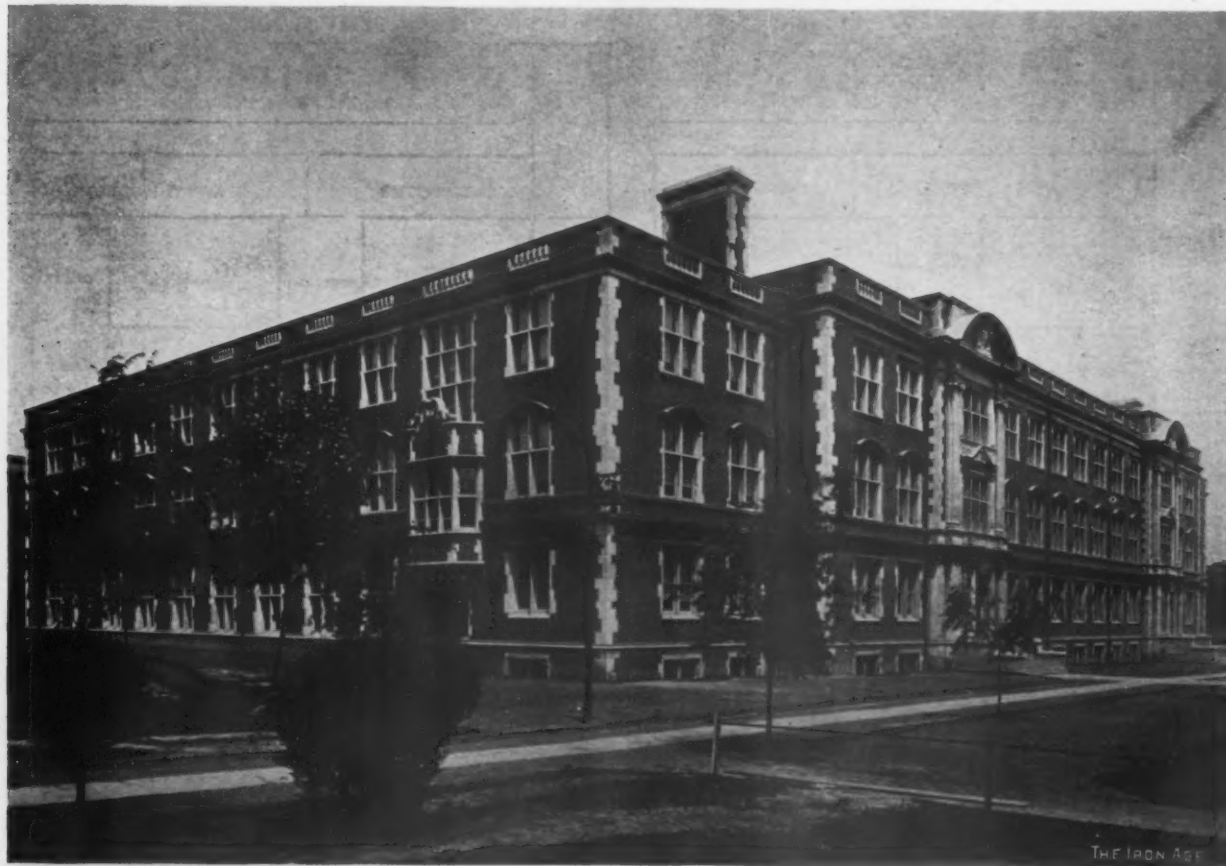


Fig. 1.—The University of Pennsylvania's New Engineering Building.

creasing size of the classes. The civil and mechanical engineering departments this year have a total enrollment of nearly 600 students and an instructing staff of 40. The new building, which has just been occupied, is believed to contain the finest and most complete laboratories of their kind for instruction in engineering.

### **The Dedicatory Ceremonies**

took place in the assembly room of the new building on Friday, October 19. After the invocation by the Rt. Rev. Ozi W. Whitaker, the building was formally presented to the university by Emlyn L. Stewardson, on behalf of the architects, Cope & Stewardson. On behalf of the trustees, the keys were accepted by the provost, Charles Curtis Harrison. The successor of the late Dr. Pepper, Mr. Harrison, has devoted all of his energies and a considerable share of his large means to the up-

Charles Whiteside Rae, chief engineer, U. S. A.

John Fritz, Bethlehem, Pa.

Mansfield Merriman, professor of civil engineering, Lehigh University.

S. M. Vauclain, Baldwin Locomotive Works.

Frederick W. Taylor, president American Society of Mechanical Engineers.

Frederick P. Stevens, president American Society of Civil Engineers.

Samuel Sheldon, president American Institute of Electrical Engineers.

Henry W. Spangler, chief of Mechanical Engineering Department, University of Pennsylvania.

Edgar Marburg, professor of civil engineering, University of Pennsylvania.

Ramon Ibarrola, Mexico.

William P. Blake, the veteran mining engineer and geologist, New Haven, Conn.

An oil portrait of the late J. Vaughan Merrick was presented to the department on behalf of Mr. Merrick's



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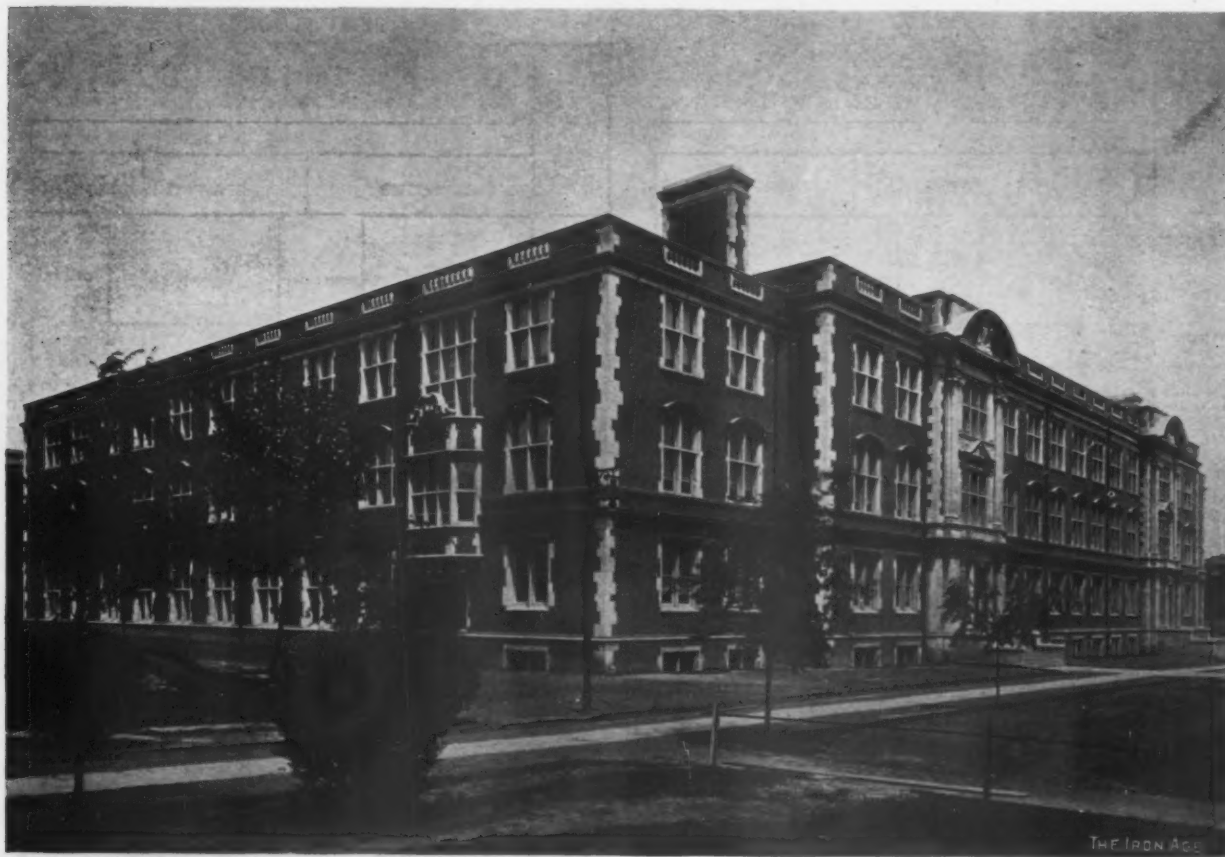


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family by Joseph Levering Jones and accepted by the vice-provost.

Frederick W. Taylor, president of the American Society of Mechanical Engineers, and Dr. Alexander C. Humphreys, president of the Stevens Institute of Technology, delivered the principal addresses, being introduced, respectively, by Prof. Henry W. Spangler of the mechanical engineering department of the university and Dr. Edgar Marburg of the civil engineering department.

In the evening the special guests of the university

present university group and has a frontage of 300 ft. and a depth of 210 ft. at one end and 160 ft. at the other. Including equipment the building has cost upward of \$800,000. It is fireproof, three stories high, in addition to which there is a basement covering about a third of the entire site, bringing the total floor area up to about 128,000 sq. ft. It is heated by a direct steam system, each room being heated by steam coils supplied with low pressure steam exhausted from the university's light and heat station. Electrically driven fans, located in the

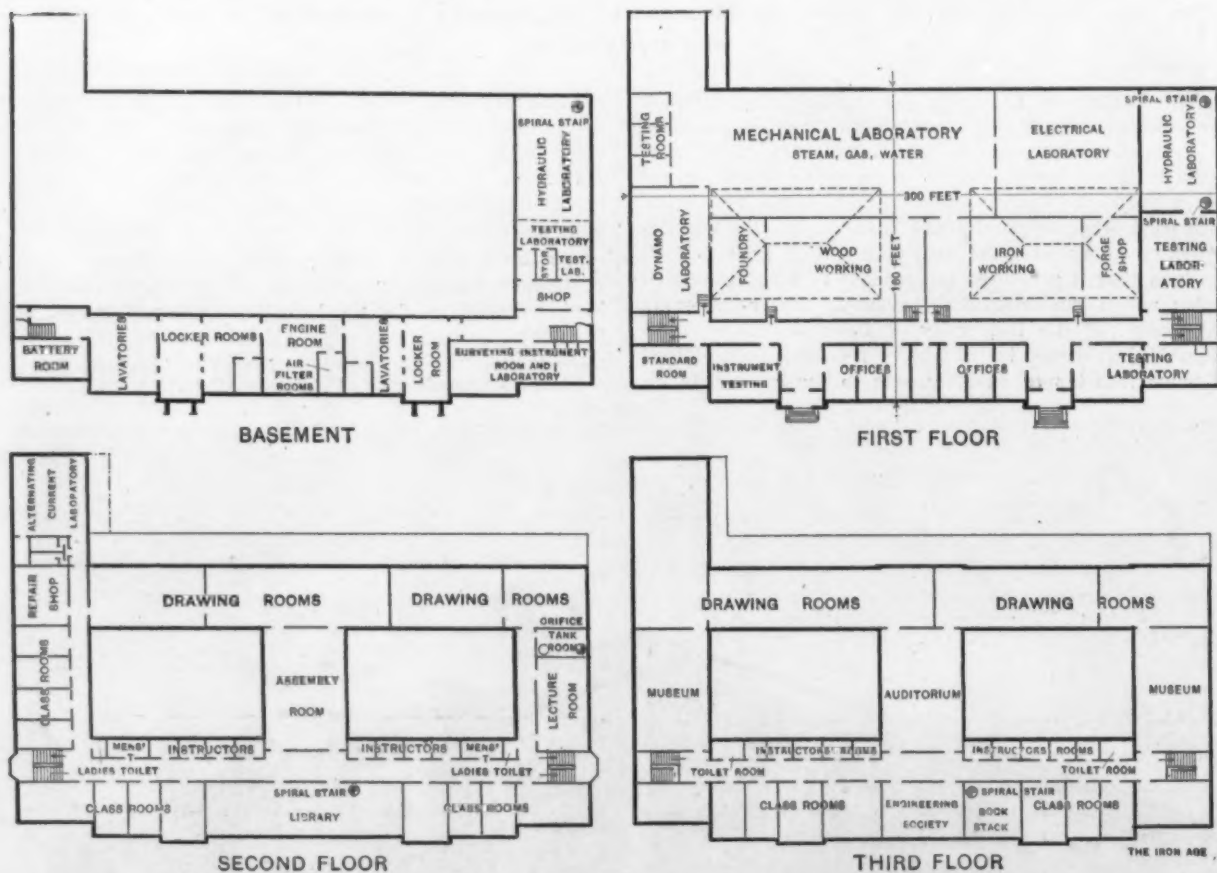


Fig. 2.—Basement and Roof Plans of the Engineering Building.



Fig. 3.—A Part of the Lesley Cement Laboratory.



Fig. 4.—The Olsen 200,000-Lb. Universal Testing Machine.

were entertained at a dinner given at the Union League by the General Committee and Alumni of the Civil and Mechanical Engineering Departments, about 275 persons being present. Among the speakers were W. F. M. Goss, Henri Vetillart, Admiral Melville, James M. Dodge of Philadelphia, Charles Whiting Baker, editor of the *Engineering News*, and Dr. Edgar F. Smith.

#### The Building.

The new building, an exterior view of which is given in Fig. 1, is the largest of the 70 buildings comprising the

basement, force air into all the living rooms, and other fans in the attic exhaust it from the toilets. By subdividing the system into sections, each independent in itself, it is possible to operate only those associated with any part of the building which may be occupied at one time. The motors are controlled from points convenient to the instructors in charge of the departments served. The building is lighted by electricity and the scheme for illumination has been very carefully worked out, first with respect to securing the best lighting and second to providing a pleasing effect in the illumination. Current is

supplied during times of small demand directly from the central station, and when the demand is large from the local plant in the center of the basement. This plant consists of one 25-hp. and two 75-hp. Westinghouse standard engines directly connected to General Electric generators. Steam for the engines is supplied from the central station and after being used by the engines is sent into the heating system of the building. The lighting of the halls and library is by 50-candle power Meridian lamps. The classrooms are lit by clusters near the ceiling. The drawing rooms and laboratories are lit generally by 5-ampere inclosed arc lamps placed about 15 ft. apart, each provided with opaque bottom shade and concentric diffuser.

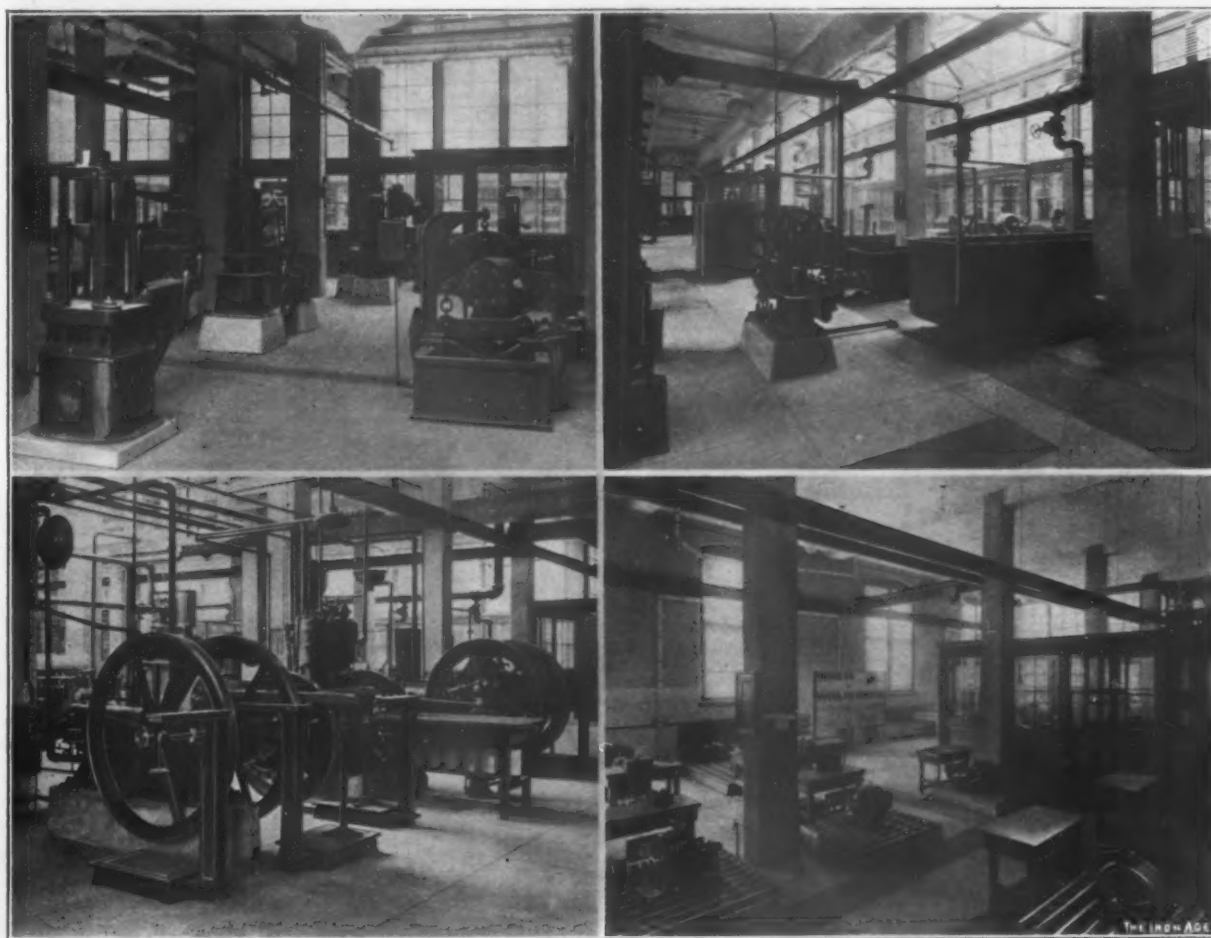
The east end of the building is devoted to the civil engineering department and the west end to the mechanical engineering. In the basement, plan of which is shown in Fig. 2, are locker rooms, lavatories, machinery for heating and ventilating, storage battery rooms, laboratories for geodetic and hydraulic work and

drawing rooms. A separate room will be allotted to each class and an individual desk to each student. In the extension on the west side is an alternating current laboratory, with facilities for two and three phase work and photometric work. An instrument repair shop is adjacent to this laboratory.

On the third floor is a large room for the use of the engineering societies, and the general supply store and the library extend through the middle of the center of the building, the space along the front being otherwise assigned to classrooms and to instructors' rooms along the south of the light wells. In the east and west wings spacious rooms have been set aside for engineering museums. The rear of this floor is also devoted to drawing rooms, which, like the drawing rooms on the second floor, will have the full advantage of north light through windows of ample dimensions.

#### The Hydraulic Laboratory

occupies rooms in the basement and the first floor directly overhead and a small room on the second floor, the total



Material Testing.  
Gas Engine Testing.

Pump and Water Motor Testing.  
Dynamo and Motor Testing.

Fig. 5.—Views in the Laboratories.

testing materials of construction. At the front of the first floor, between the two main entrances, are the offices of the heads of the departments. The remainder of this floor is taken up by the various laboratories and testing rooms. Two large light wells terminate in skylights over the ground floor, and in this central space, which is about 50 x 200 ft., are the various workshops.

On the second floor a reference library and reading room occupy the central space at the front of the building. The library and stack at one end will hold 20,000 volumes. The latter is flanked on either side by a series of recitation and lecture rooms, which are continued along both sides of this floor. Between the light wells at the center of the building is a students' assembly room with about 2,500 sq. ft. of floor space. There are also a number of rooms for instructors along the south side of the light wells. The rear portion of this floor for nearly the entire length of the building is assigned to

area being about 5300 sq. ft. It contains a circular vertical steel pressure tank  $5\frac{1}{2}$  ft. in diameter and 37 ft. high, which extends from the basement floor to the second story ceiling. This tank has orifice devices designed to permit changing orifice plates while the tank is under pressure. The tank's maximum working pressure is 65 lb. per sq. in., or a head of about 150 sq. ft. The tank may be put under city water pressure, the pressure of water in a standpipe extending a few feet above the roof, or under higher pressure by direct pumping. The discharge from the lower orifice passes into one of a pair of large weir tanks of reinforced concrete, each 34 ft. long and  $5 \times 5\frac{1}{2}$  ft. in cross section. The two tanks are connected by a sluice gate so that they may be used jointly as a single large calibrated measuring tank of 13,000 gal. capacity. At the ends of these tanks weirs with and without end contractions may be obtained, as well as discharges through orifices under low heads.



The tank may also be converted into a canal for investigations on the flow over dam crests.

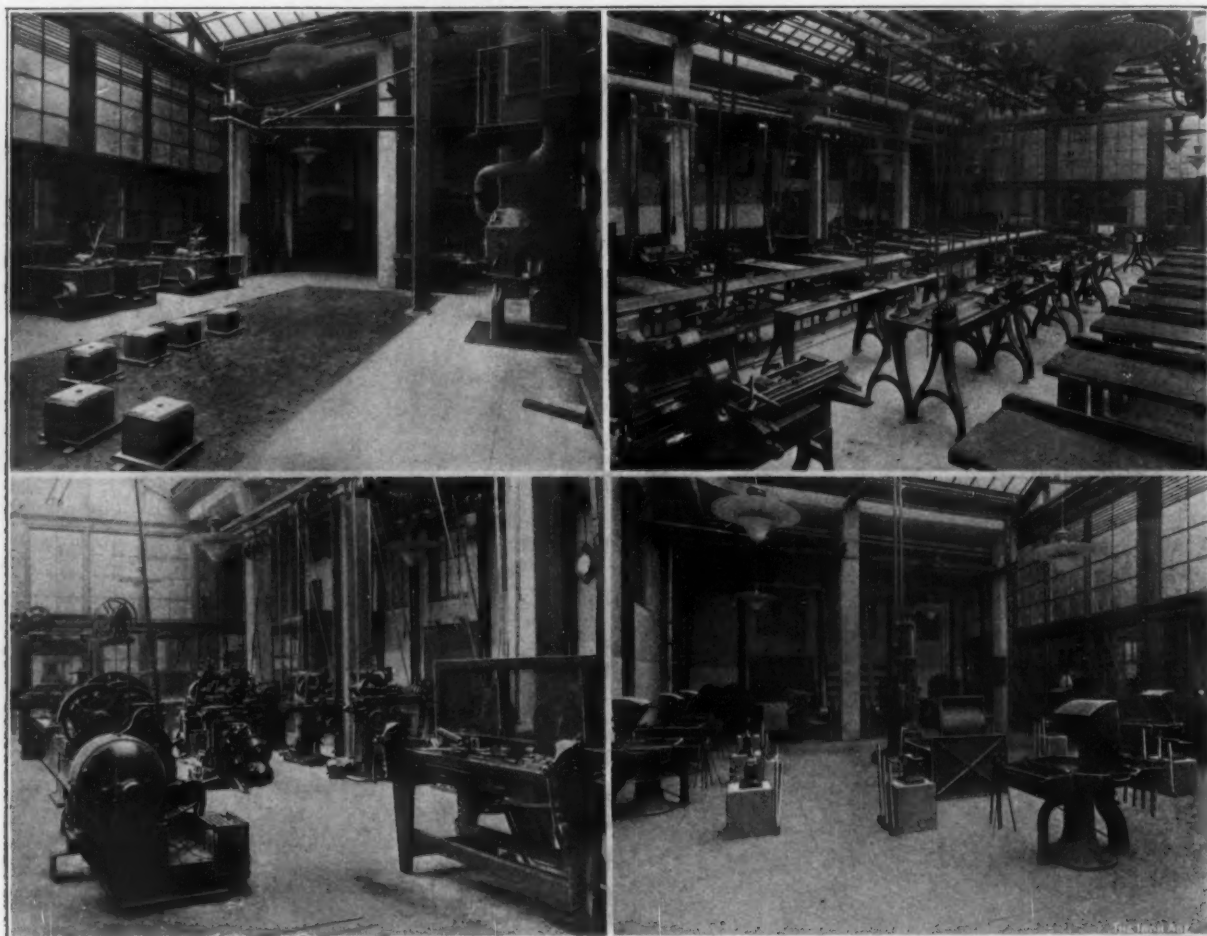
The discharge from the weirs leads directly to a pumping reservoir of reinforced concrete, 23,000 gal. capacity. All water from the apparatus may be weighed before it passes into this reservoir by diverting it into a permanently mounted steel chute provided with a pair of valves operated by quick action hydraulic lifts; opened alternately, and discharging into a pair of steel tanks mounted on scales. Each of these tanks has a working capacity of 1800 gal. From the main reservoir the water is pumped by three Worthington 4-in. two-stage pumps, each driven by a variable speed 35-hp. electric motor, and having a capacity of 450 gal. per minute against a maximum head of 165 ft., or larger discharges for lower heads. These pumps may be operated singly or in series.

An important feature is a standpipe 12 in. in diameter and 65 ft. high, extending from the basement floor up

The laboratory is equipped with a 9-in. turbine and a 12-in. reaction wheel, suitably mounted for efficiency tests; an assortment of water meters, representative of all the leading types, and a great variety of minor apparatus.

#### The Lesley Cement Laboratory

is believed to be the best equipped of its kind in the country. The fund for its equipment was provided by Robert W. Lesley of the class of '71, after whom the laboratory has been named. It occupies a floor space of about 1700 sq. ft. and is divided into two parts, the larger devoted to instruction in the standard tests of cement, and the smaller to concrete work and also research investigations. The larger room, Fig. 3, contains four large slate top mixing tables, each accommodating four students and supplied with a damp closet subdivided into four sections, four lockers and drawers for storing apparatus for routine tests, and two balances. Graduated



The Foundry.  
Machine Shop.

Wood Shop.  
Forge Shop.

Fig. 6.—Views in the Shops.

through the roof, connecting with the main pipe circuits and with the pressure tank at top and bottom. Any piece of apparatus may be connected to the standpipe and be subjected to a constant static head of predetermined height up to 65 ft. For greater pressures connection must be made with the pressure tank or directly with the pumps.

In a corner of the main pumping reservoir a watertight 8-in. tubular well 110 ft. deep is provided for efficiency tests and general experimental work with air lifts and deep well pumps. Circuits of 10-in. cast iron pipe are supported on iron wall brackets near the basement and first floor ceilings, with provisions at intervals for attaching apparatus. The system as a whole is carefully planned for conducting a variety of experiments concurrently without interference. Covered concrete gutters extend the length of the laboratory, on the basement and first floor, to carry the discharge from minor apparatus to the pumping reservoir. That from the first floor may be conducted to the weighing tanks before it enters the pumping reservoir.

burettes are mounted between these tables, connected to a water tank, through which water at a normal temperature may be accurately and quickly obtained. A large slate top table supplied with gas outlets is used for mounting smaller apparatus and affords space for special experimental work.

A large concrete immersion tank capable of accommodating concrete beams 13 ft. long is installed in this room and provided with a special beam crane for handling and transferring to special carrying frames mounted on casters, designed to transport the beams to a 200,000-lb. Olsen universal testing machine, with permanent table for transverse tests, installed in the laboratory just across the hall. A concrete block for molding compression specimens is provided in one corner of the room, and above and back of it, is a case of shelving for storing. Several storage bins for stone and sand are provided, as well as a wooden mortar box for mixing concrete. This laboratory is further equipped with molds for making 8 x 11 in. beams, 13 ft. long, and 8 x 8 in.



beams, 9 ft. long. For transporting material a steel truck car in connection with a 1200-lb. lift is used.

The 200,000-lb. universal machine, previously referred to, and shown in Fig. 4, which forms part of the equipment of this laboratory, though installed in an adjacent room, is an Olsen three-screw vertical machine fitted with a beam extension 15 ft. long, designed for a working load of 120,000 lb. It is operated by a direct connected 5-hp. two-speed electric motor, and is equipped with an autographic attachment for recording stress deformation diagrams.

#### The Testing Materials Laboratory.

The laboratories for testing materials other than cement occupy a first floor room and two in the basement and cover about 3000 sq. ft. The floor of the former is of massive reinforced concrete construction supported on steel beams and designed for a working load of 500 lb. per sq. ft. The largest machine, with a capacity of 600,000 lb., is under contract, but not yet installed. It is an Olsen vertical four-screw machine, of the universal type, capable of receiving a column 24 ft. long, provided with beam extensions below the floor level 21 ft. long, designed for a load of 200,000 lb. on a span of 20 ft.

The other equipment consists of a 200,000-lb. Olsen three-screw universal machine, with beam extensions 13



Fig. 7.—A View in One of the Drawing Rooms.

ft. long, designed for a load of 120,000 lb. on a 12-ft. span; a 100,000-lb. and two 30,000-lb. Olsen machines; one 30,000-lb. Falkenau-Sinclair machine; one 60,000-in. lb. torsion machine, a Thurston-Riehle autographic pendulum torsion machine; a 100,000-lb. transverse machine, a cold bend machine, capable of bending a steel bar 1 sq. in. in section, and a 15,000-lb. wire testing machine, adapted also for receiving compression specimens up to a length of 3 ft. With the exception of the transverse, the wire testing and the pendulum torsion machines designed for hand operation, all of these machines are driven by independent electric motors.

These laboratories are further equipped with a great variety of special apparatus, including two-beam fiber extensometers; a Henning recorder, a Johnson & Ewing extensometer, the latter reading to 0.0001 in.; two deflectometers, shearing apparatus for iron, steel and timber, besides a large assortment of micrometers, calipers, speed indicators and tools for the preparation and marking of specimens.

A small room in the basement contains two rattlers for testing paving bricks, which may be operated singly or jointly by an electric motor. The testing apparatus in this room consists of an Olsen and a Riehle lever machine, a Fairbanks and a Falkenau-Sinclair machine of the shot type, and a 50,000-lb. hand power hydraulic machine for compression tests. The lever machines are driven by independent electric motors, and load may be applied at a uniform rate, varying from 100 to 600 lb. per min. There is also an Olsen mechanical briquette mold-

ing machine, a Howard & Morse automatic sifting apparatus for cement and sand and a Bauschinger expansion apparatus.

Nine soapstone immersion tanks variously subdivided and supported in steel frames in three tiers are piped for hot and cold water to supply a mixed flow at any temperature, and adjustable overflow discharge connections maintain a continuous flow of water at a variable rate. One of these tanks is supplied with 32 small three-shelved zinc racks for the storage of briquettes. A large soapstone damp closet, divided into two compartments, accommodates the larger briquette and beam molds. A series of cement bins and briquette racks are ranged along one of the walls, the latter being subdivided and numbered for classifying contents and accommodating several thousand briquettes. Glassware and special apparatus are stored in a large case. The laboratory is equipped with a very complete outfit of smaller apparatus, including balances of various degrees of sensitiveness, specific gravity apparatus, briquette molds, &c.

A glass inclosed office overlooks this room and the adjoining research laboratory. The latter is equipped with one standard mixing table and its full complement of apparatus. It contains the boiling apparatus for accelerated tests, mounted on an iron stand, and a drying oven for use in connection with specific gravity and absorption tests. A well equipped machine shop is provided in the basement for constructing and repairing apparatus and preparing test specimens for use in the laboratories.

#### The Geodetic Laboratory

occupies a spacious, well lighted room in the basement, which is here entirely above ground. The surveying instruments are kept in this room within easy access of a side exit to the street. The equipment consists of a large assortment of instruments used in ordinary engineering practice, and a variety of instruments of greater precision employed in geodetic surveying. The equipment comprises one 10-in. theodolite reading to single seconds by micrometer microscopes, two triangulation and one city transit reading to 20 seconds, 14 engineers' transits, 2 precise levels, 4 dumpy levels, 8 wye levels, 4 plane tables, 4 compasses, 4 sextants and a large assortment of miscellaneous apparatus, such as mercurial and aneroid barometers, prismatic compasses, pocket sextants, clinometers, passometers, hand levels, planimeters, level triers, pantograph, curvograph, trigonomet, collimator, slide rules, railroad curves, tape testing apparatus, stadia sketching tables, stadia and level rods, range poles, chains, tapes, pins, &c. The apparatus is distributed in a series of closets with glass fronts, each closet accommodating the outfit for a separate surveying party, thus admitting of the prompt and orderly distribution of the equipment among a large number of students. Piers and large tables are provided for indoor work, especially in inclement weather.

#### The Mechanical Laboratory

views of which are given in Fig. 5, is located on the first floor and occupies a total of about 1000 sq. ft. It is in the form of an L, the main leg being 183 ft. long by 6½ ft. wide and the smaller one 40 ft. long by 38 ft. wide. The apparatus is placed in groups, those relating to allied subjects being located together, as in the standard room, boiler plant and testing floor, producer room, gas engine laboratory, heating room, refrigerating room, steam laboratory, material testing, dynamometer laboratory and hydraulic laboratory. The gas engine plant consists of four gas engines of various sizes and makes, properly equipped for making all classes of tests on them. A 100-hp. Roberts high pressure boiler is provided for boiler tests and for supplying highly superheated steam for testing purposes. In connection with it are a Wainwright feed heater and a Worthington duplex feed pump, weighing tanks, &c.

The steam laboratory contains a number of engines, from a vertical compound of about 25 hp. to a 15-hp. De Laval steam turbine, and has among other steam driven appliances a two-stage Ingersoll air compressor, a 6 x 6 in. Harrisburg engine exhausting into a Wheeler condenser, a 7 and 13 x 10 in. Reeves vertical compound engine, a Snow

pump with jet condenser, a 10 x 16 in. Porter-Allen engine, an 8 x 10 in. Ames engine, a 10 x 24 in. Hamilton-Corliss and a 10-hp. Fairbanks engine, together with all the small appliances required for testing them. In that portion of the laboratory devoted to material testing there are four machines from 30 to 60,000 lb. for tension and compression work, two machines for torsion work, each of which is separately motor driven. The dynamometers for measuring power transmitted are installed in another portion of the laboratory.

For hydraulic work numerous tanks, meters, pumps and water wheels have been provided. Each of the machines in this laboratory has been installed for use in making certain classes of experiments, and the appliances supplied with each machine are such that the entire work of the laboratory may be carried on at one time. The laboratory is equipped with a large number of indicators, gauges, revolution counters and the innumerable small appliances required for the carrying on of work of this type.

In addition to the laboratory proper a room intended for the testing of instruments and for making tests of coal, gas and the similar work required of a mechanical engineer has been located on the first floor. Three small rooms in addition are provided, in one of which a refrigerating machine is installed; in the second, the apparatus for making tests on blowers and heating appliances, and in the third room apparatus for the testing of radiation through walls of various types.

The steam, exhaust and water piping is run overhead. Steam at 100-lb. pressure is supplied from the university light and heat station, the exhaust piping also connecting into the general exhaust system. Power outlets are distributed throughout the laboratory, providing for the various motor drives. The main lighting is done by arc lamps suspended from the ceilings, with outlets at convenient points for the connection of portable lights. The water system comprises an 8000-gal. cistern for cold water, a 2900-gal. hot well, a cooling tower with its pump and fans, a motor driven centrifugal pump handling 625 gal. per min., to be used as a service pump, and a 22,000-gal. tank in the attic, together with the system of piping to distribute the water through the laboratory. Three runways, with travelers and chain hoists, provide facilities for handling the heavier machine parts.

#### The Electrical Laboratory.

There are four electrical laboratories, three on the first floor and one on the second. The beginners' laboratory on the first floor is intended for measurement of current, resistance, inductance, capacity, &c., the calibration of voltmeters, ammeters, wattmeters, &c., and a floor space of 4500 sq. ft. is divided into four separate testing rooms. A concrete table and a galvanometer pedestal is provided for each student, there being accommodations for 42 men, divided into four sections. Each of the four sections is provided with its own switchboard and its own storage battery installation, enabling the entire number of men to be working at the same time. The distributing switchboards have been designed for the work, and it is possible to get any combination of direct or alternating current for testing purposes.

The testing laboratory for direct current, also shown in Fig. 5, has a floor space of about 2000 sq. ft. It is on the ground floor, and has all its apparatus mounted on raised foundations, to which any dynamo or motor can be attached. Provision is made for handling 12 tests at one time, and the apparatus for each of these is complete. The distributing switchboard here supplies current of 110 volts, or at 6, 20, 110 or 150 volts, or any combination. The main power supply is taken from the building plant, 500 amperes being available at 110 volts. All the dynamos used are motor driven, having field rheostats for regulating.

The alternating current laboratory on the second floor has an area of over 2100 sq. ft. The wiring in this room is overhead from a switchboard over 14 ft. long, and all the circuits are protected by circuit breakers. The apparatus installed is such that each testing place is practically a complete isolated plant. For supplying cur-

rent four direct connected generator sets are used, driven by direct current motors, three sets having polyphase generators, and the fourth, four single phase alternating current generators.

For each location, there is the necessary equipment of prony brakes, scales, adjusting resistances, switches, thermometers, speed counters, stop watches and tachometers, and, in addition, about 90 instruments, 20 of which are for direct current, the remainder being wattmeters, ammeters and voltmeters of suitable range for the rapid and accurate carrying on of the work together with frequency indicators, power factor indicators and synchronizers.

Two rooms are built especially for student's work in photometry, these having labyrinth entrances and dull black walls. A separate storage battery is provided for handling this work. Each photometer has a three meter track and universal rotating stand. One is provided with the Lummer-Brodhum screen and one with the Bunsen screen, and a Flicker photometer is provided for use in measuring lights of dissimilar composition.

A standard room on the first floor with a battery room directly beneath it in the basement has been provided for doing fine electrical standardization work.

#### The Shops.

About 12,000 sq. ft. of space on the ground floor under the skylights is used for shop work and includes lumber and iron room, offices for instructors and a large central tool room. It is divided into wood and pattern shop, iron and machine shop, foundry and forge shop, all shown in Fig. 6. Each shop is arranged for handling 15 men at one time, or a total of 90 in a class.

The wood shop is equipped with 15 30 x 78 in. benches, 10 12 in. turning lathes, mortise machine, tenon machine, emery wet tool grinder, planer and trimmer knife grinder, band saw setting machine, band saw filing machine, and saw filing stands for hand and circular saw sharpening. The machinery is run by a 5-hp. motor at the line shafting.

The pattern shop contains 15 benches, 8 turning lathes of various makes and sizes, two band saws, a large tilting table jig saw, jointer, surface planer, combination circular rip and cross-cut saw, Universal sanding machine, an Oliver trimmer, a Fox trimmer, a motor-driven wet tool grinder. An electric glue heater and gluing tables are conveniently located between the two shops. A 15-hp. motor drives the line shafting.

In the foundry are 10 large molding troughs, one trough for core making, coal bins, two brass furnaces, a 22-in. Colliau cupola, core oven pickling vat, and a large space for bedding-in work. The line shafting is driven by a 5-hp. motor. A 5-hp. motor direct connected to a fan supplies blast to the cupola. A swing post crane serves the brass furnaces, cupola and part of the molding floor.

The iron shop has eight large benches, with 16 vises of various makes and sizes, seven 12-in. speed lathes, two 11-in. and four 12-in. engine lathes, one spinning lathe, two 20-in. drill presses, a power hack saw and an emery wet tool grinder. The machinery in this shop is run from line shafting, driven by a 15-hp. Weston steam engine.

In the machine shop are two large benches with four vises, one 30-in. drill press, a 12-in. sensitive drill press, universal cutter grinder, universal lathe and planer tool grinder, twist drill grinder and emery wet tool grinder, three speed lathes, four engine lathes, two quick change gear engine lathes, a 30-in. Lodge & Shipley high speed engine lathe, direct connected to a 10-hp. motor, with apron control; a Garvin universal milling machine, Brown & Sharpe universal milling machine, Cincinnati universal milling machine, direct connected to a variable speed motor; a 16-in. Kelley shaper, 16-in. Walcott motor driven shaper, a power hack saw, large metal circular saw, an 18 in. by 5 ft. Whitcomb planer, 38 x 38 in. by 10 ft. Gray spiral geared planer, direct connected to a 10-hp. motor, and a Warner & Swasey screw machine. An iron erecting floor is served by a swing post crane and a 10-hp. motor drives the line shafting.

In the forge shop are 10 Buffalo down draft forges, a



large forge serving a 250-lb. steam hammer, a 5-hp. motor direct connected to blast fan and a 5-hp. motor direct connected to an exhaust fan; nine 100-lb. anvils, a drill press, emery wet grinder, power punching machine, power shears, a pipe cutting and threading machine, a large bench with two vises, two electric soldering irons and two pipe vise stands. The line shafting is run by a 5-hp. motor.

The small tool equipment for each shop is complete and includes a variety of air driven tools.

A repair shop is located on the second floor and contains about 900 sq. ft. of floor space. In this room all broken appliances are repaired and much new apparatus is manufactured. The equipment is complete, both for wood and iron work, and the tools are all motor driven.

#### The Drawing Rooms.

The drawing rooms are located on the north side of the second and third floors and cover 11,800 sq. ft. A view in one of them is given in Fig. 7. The largest room is devoted to Freshman work and is 117 ft. long by 32 ft. wide. This room is divided by a high partition from the Sophomore drawing room, which is 86 ft. long by 37 ft. wide. Midway of the partition is an instructor's office which gives the instructor full command of both rooms, when he is not out in the class rooms. The Senior and Junior rooms are on the second floor and form practically one room 152 ft. long by 32 ft. wide, with an instructor's office between. Provision is made for independent work of 101 Freshmen, 93 Sophomores, 75 Juniors and 46 Seniors.

The lighting of these rooms is excellent, the windows being wide and high, those on the south opening on the west court which is 55 ft. wide. The artificial light which is needed on winter afternoons is obtained from 110-volt inclosed arc lamps with opaque lower globes and concentric diffuser shades. The lighting generally is excellent, the distribution being such that there are practically no shadows.

#### Classrooms.

In the western end of the building there are 13 classrooms, each intended to handle a small section. The entire available wall space is covered with blackboards, so that it is possible to insure daily work from every student. In the basement, at the west end, is a large lavatory supplied with washing facilities and with shower baths. Directly adjoining are two locker rooms provided with expanded metal lockers of ample size, one being assigned to each student.

In all the work done in the department students are divided into small sections, the instruction being largely individual. In laboratory work especially the work is done absolutely independently, a student being assigned his work and obliged to see that his apparatus is in proper shape and to carry out the experiment alone.

At the hearing before the New York State Railroad Commission when the increase of the New York Central & Hudson River Railroad Company's capital stock from \$150,000,000 to \$250,000,000 was authorized officers of the company stated that the reconstruction of the New York terminal and suburban lines and their equipment with electric traction will absorb the greater part of the money raised by this new stock issue. The carrying on of regular traffic at crowded terminals in a great city while the reconstruction work is being done adds enormously to the expense of the undertaking.

The acting commissioner, Robert Wuest, reported at the semiannual meeting of the Administrative Council of the National Metal Trades Association at Cincinnati, October 16 and 17, that the membership had increased 47 per cent. in six months, or since the annual convention at Cleveland in March. In view of the large number of local organizations that have become branches of the N. M. T. A. a redistricting of the territory is proposed. The Southern district has established headquarters at Atlanta, Ga., with J. W. Glover of the Glover Machine Works, Marietta, Ga., as secretary, and Roger Davis, assistant secretary.

#### The English Trade Situation.

We have received an interesting letter from Cecil M. Sanders, of Lewis Lazarus & Sons, London, from which the following extracts are taken:

It looks as though we were on the eve of another all round advance in prices here. Speaking generally, for some months past opinions as to the prospects of the market have somewhat flagged. We seem to get so accustomed in this country to working with the shadow of the smoke from the furnaces of our terrible Transatlantic and Teutonic competitors constantly over us that when the sky actually does clear we appear pitifully anxious to remind ourselves that this is only a temporary rift in the clouds. During September, however, it has become apparent, even to the man in the street, that the position has been entirely reversed, and, instead of fighting with us over business at cut-throat prices, our two big neighbors are now scrambling one against the other as customers, and not competitors. All this summer Germany has been taking pig iron at record rates of shipment, amounting roughly to 100,000 tons monthly, and this week America has also put a sturdy finger into this pie, and hooked out 50,000 tons to be going on with. There have also been some very large contracts placed in the north of England by German firms for steel plates, reported to run into 70,000 tons, while the United States has taken its share in heavy purchases of tin plates. On the top of this we are getting a lot of business that in ordinary times would never come near us from colonial and foreign markets, who would normally place their orders in America or Germany, but owing to the severe tension in both these centers for domestic trade can get no satisfactory undertakings from either, and consequently shove their orders to us.

The only unsatisfactory prospect is a political one, due to the growing influence of labor in our national affairs. There is always in every country a substratum of this unsatisfactory class, and you can always safely bet on the professional agitators of this type availing their opportunity swiftly on the heels of any period of expansion of prosperity. We have always had this with us in the past, and it is a feature which has always had to be reckoned on. Experience has shown how these disturbing elements have affected progress, put on the brake, and helped to turn the wheels backward, in advance of the reactionary economical movement which usually follows a boom. Hitherto labor has been satisfied till the pinch of national adversity brought profits and wages into line again. We have never before, however, had such a big appetite to satisfy, and it is not easy to deduce from past history how far the dissatisfactions and dislocations, which surely will follow an advance in the national prosperity, will extend or what permanent results they are this time going to leave behind them in readjustments in the relationship between capital and labor.

There have been lately a number of meetings of the trades unions, one of them the Railway Servants and another the Miners' Federation. We expect to hear a certain amount of bombast put forward at such meetings, satisfied with the knowledge that it is better to keep the cork out of the bottle, and then the more it froths over harmlessly the safer for all purposes. This was all very well while there were only a few well-known agitators of this class, but with the present constitution of our House of Commons and the undoubted influence over the Government possessed by the labor section, resolutions in favor of nationalization of large labor employing enterprises, diversion of revenue from national defense purposes to objects directly connected with the benefit of the labor party, and so on, carry a more serious import than they would have earned a year or two back. I am afraid I am not deeply enough versed to think out this problem, nor highly enough placed to get the wide view possible to boss politicians or financiers, but even to my ordinary mind there appears to be a good deal going on around me that provides food for some very solid reflections.



## Bounties for the Canadian Iron and Steel Industry.

A Survey of Bounty Legislation and Bounty Payments from 1894 to 1906.

BY EDWARD PORRITT.

The iron and steel bounty legislation of the Dominion of Canada—the legislation which must be continued or abandoned by the Laurier Government in November when the tariff is revised—easily falls into two parts. In the first is the legislation for which the old Conservative and national policy governments at Ottawa were responsible; in the second is the legislation which since 1897 has been passed at the instance of the Liberal governments, in which Sir Wilfrid Laurier has been Premier and W. S. Fielding Minister of Finance. From 1878 until 1896 the Conservatives were continuously in office; and for most of this time the late Sir John Macdonald was Premier. During these 18 years the Conservatives, as now, were avowedly high protectionists. They originated what has come to be known as the national policy of Canada, and committed the Dominion to a high tariff and to the policy of bounties for the upbuilding of Canadian industries.

### First Iron Bounty Legislation in 1894.

In the early years of the national policy there was no iron industry in Canada worth speaking of; and the slowness with which this industry was developed may be judged from the fact that while the Conservatives enacted their first protectionist tariff in 1879 it was not until 1894—only two years before the Conservative régime came to an end and the Liberals came into power—that there was passed the first enactment authorizing the payment of bounties on iron out of the Dominion treasury.

A policy of protection for Canadian industries was the mainstay of the Conservative Government from 1889 to 1896. During these years they were continually amending the tariff in the interest of Canadian manufacturers; and while tariff protection and bounties were both part of the national policy it was not until the end of the Conservative rule was almost in sight that bounties were bestowed on the iron industry. This in itself is a proof of the slowness with which the industry was developed in Canada; for, as later experience with bounty legislation has made plain, no sooner is the installation of a plant for the manufacture of iron or steel of descriptions not hitherto made in Canada contemplated than its promoters appear at Ottawa to press for bounties, and in most instances since 1897 this pressure on the Government has been exerted with complete success.

### The 1894 Bounties.

By an act of 1894 three sets of bounties were established. There was a bounty of \$2 a ton on all pig iron made in Canada from ores mined in Canada; a bounty of \$2 on puddled iron bars, and a bounty of \$2 on steel billets. No bounties were payable under this legislation in respect of pig iron made from imported ores. This legislation went into force in March, 1894; and by the act its operation was limited to the five years ending March, 1899. There was, however, an exception to the limitation; for it was provided that in the case of furnaces installed and got to work at any time before March, 1899, bounties on their output were to be paid for five years from the time that the furnaces were first brought into service.

The act had been in operation for only four months—March 27 to June 30, 1894—when the first payments were made under its provisions. The sum of \$125,044 was then paid to four iron manufacturers. To the Canada Furnace Company—the company which now owns the blast furnace at Midland, Ont., and which then and now owns the furnace at Radnor, Quebec, at which bog ores are used—there was paid \$1507; to the Londonderry Iron Company, Nova Scotia, \$49,043; to John MacDougall & Co., Montreal, \$5,654, and to the New Glasgow Company, which has since been organized into the Nova Scotia Steel & Coal Company, owning the blast furnace and steel works at Sydney Mines, Nova Scotia, there was paid

\$55,269. All these payments in 1894 were in respect of pig iron; and this disbursement of \$125,044 from the Dominion treasury at Ottawa is an official record of the capacity of the Canadian furnaces in the first year of the bounty legislation of the old Conservative government.

### The Liberal Party Opposed to Tariff and Bounties.

At that time, and for 16 years previously, the Liberals were in opposition; and during all these years they were vigorous and persistent in their condemnation of the tariff and the bounty system. In the debates on the address to the throne, with which every new session of Parliament at Ottawa begins, and each year when the Minister of Finance introduced the budget which determines all tariff and fiscal legislation for the ensuing 12 months, the national policy was denounced as barefaced robbery of the people of Canada for the benefit of the manufacturers; and motions were made from the opposition benches in favor of a return to the fiscal system in existence prior to 1879. Colonel Morrison, in the far-away days when he represented the Cairo to East St. Louis District of Illinois in the House of Representatives, never used language more vigorously condemnatory of the Morrill tariff than that of Sir Wilfrid Laurier (then Mr. Laurier) and Sir Richard Cartwright and other leaders of the Canadian Liberal party in the House of Commons in the days when they were in opposition to the national policy.

In 1895 the Liberals held a national convention at Ottawa and adopted the famous Ottawa programme—the platform on which they went into the Dominion general election in 1896. The foremost plank in this platform demanded the making of an end to the national policy, and called for a tariff for revenue only and the abolition of the system of federal bounties to Canadian industries.

### The Liberals in Power Become Protectionists.

The Liberals were successful in the general election in 1896. Sir Wilfrid Laurier became Premier and was supported in the House of Commons by a large majority. From June, 1896, to April, 1897, all political interest and speculation in Canada centered in the fate of the national policy. The Ottawa programme demanded its abolition and that bounty legislation should cease when the act of 1894 expired in 1899. But the only important change made in the first budget which Mr. Fielding submitted to the House of Commons was the preferential tariff for Great Britain, the tariff under which British imports pay only two-thirds of the duties levied on imports from non-British countries. For the rest the tariff was continued much as it stood when the Conservative government last overhauled it in 1896. Indeed, there were some changes in the direction of more protection; while, as regards the bounties on iron and steel, although the act authorizing these did not expire before 1899, this legislation was renewed and the bounty system further extended in the session of 1897.

### Bounties Extended in 1897.

By the legislation of June, 1897—the second enactment of the Canadian Parliament authorizing the payment of bounties on the production of iron and steel—bounties became payable on pig iron, steel ingots, steel billets and puddled iron bars. There was established a bounty of \$3 a ton on steel ingots "manufactured from ingredients of which not less than 50 per cent. of the weight thereof shall consist of pig iron made in Canada"; of \$3 a ton on puddled bars; of \$3 a ton on pig iron made from Canadian ore; and of \$2 a ton on iron produced from imported ores.

The act of 1897 is significant in the history of the iron and steel industry in Canada, as it was the first in which provision was made for the payment of bounties

on pig metal produced from other than Canadian ores. It was the aim of the old national policy to develop the mines as well as the factories of Canada, a policy which still has its upholders in the leader of the Conservative party in the House of Commons, R. L. Borden, and many of his supporters who, ignoring the well ascertained conditions which prevail in the iron and steel world of Canada, and particularly the lack in the Dominion of available iron ore which can be used unmixed for the production of pig metal for open hearth furnaces and Bessemer converters, are still demanding that bounties shall only be paid on pig iron when it is made from native ores. The act of 1897 went into effect June 29, and it was provided that it was to continue in force until April, 1902. The payments for the fiscal year ending June 30, 1897, were thus the last under the act of 1894.

#### First Bounty on Steel Billets Paid in 1897.

As has been shown, only four iron making companies received bounties in the first year of the act of 1894, the Canada Iron Furnace Company, Londonderry Iron Company, John MacDougall & Co. and the New Glasgow Company. By June, 1897, two new manufacturers had come on the bounty list, the Hamilton Blast Furnace Company and the Ontario Rolling Mill Company, both of Hamilton, Ontario. Bounties had been paid in 1895 only on pig iron and puddled iron bars. In 1897 there were payments in respect of steel billets as well as pig metal and puddled iron. On its production of pig iron the Canada Iron Furnace Company was paid \$14,211; the Hamilton Blast Furnace Company \$7575; the Londonderry Iron Company \$7070, and the Nova Scotia Steel Company \$37,650. On puddled bar iron the Londonderry Company drew \$2914 and the Ontario Rolling Mill Company \$104, while on steel billets \$17,366 was paid to the Nova Scotia Steel Company, a payment which establishes for the plant at New Glasgow officially the distinction of producing the first steel made on a large scale in Canada.

#### Under the Act of 1897.

The next year, 1898, the first in which the act of 1897 was in operation, there was no addition to the list of iron and steel makers, but the bounty payments are of interest as showing the comparatively small extent to which Canadian ores were brought into service by the new legislation in favor of Canadian mines. The Canada Iron Furnace Company, which at its plant at Radnor uses chiefly local ores, received \$18,491 at the \$3 a ton rate and \$117 at \$2 in respect of pig iron made from imported ores. The Hamilton Blast Furnace Company, the first concern to use Ontario ores on a large scale, received \$16,277 at the \$3 rate and \$74,332 at the \$2 rate, the latter on pig iron from imported ores, mostly from the Lake Superior country. The Nova Scotia Company, which by this time was obtaining much of its ore from Belle Isle, Newfoundland, which under the act of 1897 as under later legislation is regarded as foreign or imported ore, received \$17,079 at the \$3 rate and \$31,047 at the \$2 rate; while the only payment to John MacDougall & Co. was \$5112 in respect of pig iron made from Canadian ores. In this year there was the first payment of bounties in respect of steel ingots. For these the Nova Scotia Company drew \$54,411 from the treasury at Ottawa and \$13,042 in respect of steel billets.

#### The Legislation of 1899.

These rates of bounty, with the differential in favor of Canadian ore, were paid until April 23, 1902. They came into operation June 29, 1897; but on April 23, 1902, when the act of 1897 would have expired, a new schedule came into operation, under an act passed in August, 1899, by which the bounties were continued on a diminishing scale until June 30, 1907. The act of 1897 had still nearly three years to run when the Government in August, 1899, carried through Parliament the measure by which the bounties were continued for another five years.

The apparent haste of the Government in thus announcing that it would continue the bounties for five years after 1902 is easily explained. The year 1899 was that in which the Dominion Iron & Steel Company of Sydney was organized; in which the installation by the Lake Superior Consolidated Company of what is now the

Algoma Steel Company's rail making plant at Sault Ste. Marie was begun; and also that in which the Canada Iron Company's new furnace at Midland on Georgian Bay was got to work. All these companies, certainly the Dominion Iron & Steel Company and the Lake Superior Company, at the time of their organization received substantial favors from the Provincial governments of Nova Scotia and of Ontario and from the municipalities of Sydney and of Sault Ste. Marie; and all through the summer of 1899 much pressure from Ontario and Nova Scotia was brought to bear on the Laurier government to obtain a pledge of the continuance of bounty legislation. This pledge was desired chiefly but not entirely in the interest of the Dominion Company, the Lake Superior Company, the Canada Company and the Nova Scotia Company, the oldest, and up to this time the largest of the Canadian iron companies, whose plants in 1899 had not extended beyond New Glasgow and Ferrona, although the newer plant of the company at Sydney Mines, on the other side of the harbor from the plant of the Dominion Company, was no doubt then in contemplation.

#### Bounties Thus Assured for Eight Years.

The gain to the iron and steel industry by this legislation of 1899 was that the bounties were made certain for nearly eight years to come, although after 1902, when the act of 1897 expired, they were to be on a decreasing scale. In the last year in which bounties were paid on the 1897 scale—July 1, 1901, to June 30, 1902—there was a large increase in the amount paid out of the Dominion treasury to the iron and steel plants. The amount was \$791,089 as compared with \$468,020 in 1900-1901; \$321,778 in 1899-1900, and \$280,110 in 1898-1899.

This sum of \$791,089, paid out in 1901-1902, was divided among seven beneficiaries: \$95,955 to the Nova Scotia Steel Company; \$347,900 to the Dominion Company at Sydney, which first appeared on the bounty list in 1900-01 for \$55,287; \$98,449 to the Canada Company, now operating furnaces at Midland, Ontario and Radner; \$223,057 to the Hamilton Steel & Iron Company, which by this time had absorbed the Hamilton Blast Furnace Company and the Ontario Rolling Mills Company; \$3027 to John MacDougall & Co., and \$1173 to the Electric Reduction Company. The Algoma Steel Company never participated in the bounties on the full scale of the act of 1897. The Dominion Iron & Steel Company got two payments at the higher rate, but the Algoma Company was slower in getting its equipment installed and its first payment, that for the fiscal year 1902-3, which amounted to \$48,298, was on the lower and diminishing scale established by the act of 1899.

#### Rates of Bounties Under the Diminishing Scale.

Since the diminishing scale went into effect the bounties have been as follows:

From July 1, 1903, to June 30, 1904: Pig iron from Canadian ore, \$2.70 a ton; from imported ore, \$1.80.

July, 1904, to June, 1905: Canadian pig iron, \$2.25; pig from imported ore, \$1.50.

July, 1905, to June, 1906: Canadian pig, \$1.65; from foreign ore, \$1.10.

July, 1906, to June, 1907: From Canadian ore, \$1.05; from foreign ore, 70 cents.

On ingots from ingredients of which not less than 50 per cent. of the weight consists of pig iron made in Canada, the rates of bounty have been as follows: 1903-4, \$2.70; 1904-5, \$2.25; 1905-6, \$1.65, and 1906-7, \$1.05 per ton of 2000 lb.; for puddled bars, 1901-2, \$3; 1902-3, \$2.70; 1903-4, \$2.25; 1904-5, \$1.65; 1905-6, \$1.05, and 1906-7, 60 cents a ton. Before the Minister of Trade and Commerce could pay out these bounties he had to have evidence on oath that the puddled iron bars were manufactured in Canada from pig iron made in Canada.

#### Bounties Extended in 1903 to Finished Products.

After the legislation of 1899, by which the bounties were assured until 1907, there were new developments in the Canadian iron and steel trade. Plants were installed or were in contemplation for the manufacture of descriptions of iron and steel not hitherto made in the Dominion. Accordingly in October, 1903, an act was passed providing for bounties on steel rods, structural steel and steel plates. None of these bounties was to be paid except in respect of rods, structural steel and plates



produced from ingredients of which not less than 50 per cent. of the weight is of pig iron made in Canada.

On rolled round wire rods not over three-eighths of an inch in diameter, when sold to wire manufacturers for use in making wire in factories in Canada, the bounty for the first year was \$6 a ton. On rolled angles, tees, channels, beams, joists, girders or structural steel sections, when sold for use in Canada, the rate for the first year was \$3 a ton; and on rolled plates of not less than 30 in. in width and not less than one-quarter of an inch in thickness, it was also \$3 a ton. Like the act of 1899, the act of 1903 is to expire June 30, 1907; and as is the case with the bounties in the act of 1899, those established by the act of 1903 on wire rods, structural steel and plates are on a diminishing scale. They are now, in the fiscal year July 1, 1906, to June 30, 1907, down to 35 per cent. of the original rate, or to \$2.10 for wire rods and \$1.05 for structural steel and steel plates.

#### Total Bounty Payments in Fiscal Year 1906.

For the fiscal year which ended June 30, 1906, the total payments under these three acts, 1897, 1899 and 1903, were \$2,004,339. The materials on which they were paid were as follows:

	Tons.		Bounty.
Pig iron.....	495,335	From foreign ore at \$1.10...	\$544,868
Pig iron.....	86,523	From Canadian ore at \$1.65...	142,764
Total pig iron.....	581,858	Total.....	\$687,632
Steel ingots.....	569,237	At \$1.65 a ton.....	\$941,000
Puddled bars....	3,560	At \$1.65 a ton.....	5,875
Articles manufac- tured from steel	72,875	.....	369,832
Grand total.....	1,227,530	.....	\$2,004,339

Ten iron and steel manufacturing companies drew on this aggregate sum of \$2,004,339. The accompanying table shows how the payments were allotted and the description of iron and steel in respect of which they were paid:

	Puddled iron bars.	Steel ingots.	Manu- factures of steel.	Total.
	\$	\$	\$	\$
Algoma Steel Company, Limited .....	167,420	367,770	.....	535,190
Dominion Iron & Steel Company, Limited..	246,353	408,571	302,413	957,337
Nova Scotia Steel & Coal Company, Ltd.	65,075	96,803	25,815	187,693
Hamilton Steel & Iron Company, Limited..	98,892	5,875	67,586	206,840
Canada Iron Furnace Company, Midland, O.	32,013	.....	.....	32,013
Canada Iron Furnace Company, Radnor Forges .....	8,243	.....	.....	8,243
John McDougall & Co..	4,447	.....	.....	4,447
Deseronto Iron Com- pany .....	13,664	.....	.....	13,664
Londonderry Iron & Mining Company....	51,525	.....	.....	51,525
Montreal Rolling Mills	.....	.....	7,387	7,387
Totals.....	687,632	5,875	941,000	369,832
				2,004,339

#### Nearly \$8,000,000 Paid in Bounties Since 1898.

Not taking into account the money which was paid out under the act of 1894, the act which was part of the national policy of the old Conservative governments, but including only the payments which have been made since 1898 after the Liberal government adopted and soon began to extend the bounty policy of its predecessors, an aggregate sum of \$7,619,885 has in these eight years, 1898-9 to 1905-6, been paid as bounties for the production of iron and steel. The totals for each of these years, respectively, are \$280,110, \$312,778, \$468,020, \$791,089, \$1,401,805, \$908,962, \$1,432,782 and \$2,004,339.

#### The Steel Rail Duty.

In addition to these direct money payments from the treasury and the ordinary duties in the customs tariff in the interest of the Canadian iron and steel industry, there has been some special legislation since the bounty policy was continued by the Laurier government in 1897. In October, 1903, there was an act giving the Government power by Order-in-Council to take steel rails off the free list and impose a duty of \$7 a ton "whenever the Government was satisfied that steel rails of the best quality, suitable for the use of Canadian railroads, are being manufactured in Canada, from steel made in Canada, in

sufficient quantity to meet the ordinary requirements of the market."

In May, 1905, the rail plant at Sault Ste. Marie was got to work and in June of the same year the mill at Sydney also began to make rails. Although these two plants are the only ones in Canada equipped for the manufacture of rails, and although the 1000 or 1100 tons which these plants can turn out in the aggregate in 24 hours do not begin to meet the present demand for rails, as witness the recent large purchases by Canadian railroads from American mills, and the enormous sums in duties in respect of them which are now being covered into the treasury at Ottawa, the Order-in-Council went into effect just as soon as the mills at the Soo and at Sydney were ready for business, and since June, 1905, the \$7 duty has been imposed on all importations of rails from the United States.

#### The Dumping Clause.

Later than the measure of 1903 giving this power to the Ottawa government to act by Order-in-Council, there came the dumping clause. It was embodied in the customs tariff of 1904 and was specially intended to give further protection to the Canadian iron and steel plants, chiefly against American competition. It reads:

Whenever it appears to the satisfaction of the Minister of Customs that the export price or the actual selling price to the importer in Canada of any imported dutiable article of a class or kind made or produced in Canada is less than the fair market value there, as determined according to the basis of value for duty provided in the Customs act in respect of imported goods subject to an ad valorem duty, such article shall, in addition to duty otherwise established, be subject to a special duty of customs equal to the difference between such fair market value and such selling price.

At that time, as at present, wire rods were on the free list; but to protect the rolling mills at Sydney and Montreal the dumping clause was made to apply to rods not over three-eighths of an inch in diameter, with the proviso, however, that the dumping duty shall not exceed 15 per cent. ad valorem.

#### Other Government Favors.

Apart from the general tariff there are now seven acts on the statute book of Canada intended to advance the upbuilding of the iron and steel industry, and all enacted by the Liberals who first came into power in 1896 on a platform in which there was a plank calling for a tariff devoid of any vestige of protection and for the abolition of the system of Dominion bounties to industries. Nor do these bounty enactments of the Dominion Parliament since 1897 include all the governmental favors which have been bestowed on the iron and steel industry. The Provincial governments, notable in Nova Scotia and Ontario, have also bestowed largesse upon it. The Nova Scotia Government, which owns the coal areas of the Province and draws revenue from them in the form of mining royalties, cut down the royalty by one-half on all coal mined for use at the plant of the Dominion Iron & Steel Company, and the municipality of Sydney presented the company with a site for its plant and freed the company from municipal taxation for 30 years. The government of the Province of Ontario at one time guaranteed the interest on certain bonds of the company which owns the rail plant at Sault Ste. Marie; and the municipality of Sault Ste. Marie, when the plant was first installed made a bargain with the company by which the municipal taxation of the plant is little more than nominal. Several other iron and steel plants are also free of municipal taxation.

#### How the Iron Industry Has Been Stimulated.

The bounty payments from March 27 to June 30, 1894, the year of the first bounty act, quoted earlier in this article, show that there were then only four iron making plants in the Dominion and that for that period only \$125,044 was paid out in bounties in respect of not more than 60,000 tons of iron and steel. When this is contrasted with the payment of \$2,004,339 to 10 companies in 1905-6, in respect of 581,335 tons of pig metal, 569,237 tons of steel ingots, 3560 tons of puddled bars and 72,875 tons of wire rods, structural steel and steel plates, it indicates the progress which the industry has made under the influence of the Dominion, provincial and municipal governmental stimuli.



Most of this development, as the bounty payments at Ottawa show, has taken place since another 10 years of life was given to the bounty legislation by the act of 1897. This act, despite the 16 or 17 years of hostility to the national policy which characterized the Liberals when they were in opposition in Parliament, made it certain that it was their intention now they had come into power to continue this phase of the old Conservative trade policy, as well as the protective tariff, which the Conservatives had originated. By the acts of 1899 and 1903 the Liberals went much further than the Conservatives had done in the way of bounties; and they made it plain to concerns already in the iron and steel business and to promoters of new companies for the manufacture of iron and steel that Liberal governments were as much committed to the principle of bounties as the old Conservative governments had been. The result has been that the furnace capacity of Canada has been more than trebled since the act of 1899. Among the new plants the furnace at Midland, Ontario, came first. Next came the four furnaces of the Dominion Company at Sydney; two furnaces at Sault Ste. Marie; and the last of the new furnaces to come into service was that of the Nova Scotia Company at Sydney Mines which began making pig metal early in 1905.

To-day when the continuance of the bounty policy may be said to be in the balance a new furnace of 100-ton capacity is building at Port Arthur, which for some time to come must be the most western iron plant in the Dominion; a new one is building also for the Hamilton Iron & Steel Company; the Canada Foundry Company is about to put up a 200-ton furnace on a site in the neighborhood of Niagara; and a 400-ton furnace is among the additions which are being planned at Sault Ste. Marie, where since the rail mill was got to work in May, 1905, the furnace capacity has been inadequate and has compelled the buying of pig metal at Midland and also from American furnaces.

#### Continuance of Bounties Regarded as Assured.

Last year when the Tariff Commission journeyed all over Canada there were made at every iron and steel making center pleas for a continuance of the bounties after the date of their expiration under the act of 1899, and representations were then made to the commission as to the additions which would be built to existing plants as soon as the bounties were again assured. There has been a delay of seven or eight months in preparing the new tariff and introducing it to Parliament. This was due to an accident which befell Mr. Fielding, Minister of Finance and chairman of the Tariff Commission, last January. In the meantime work has been begun on some of the new equipment which the Tariff Commission was told was to be installed just as soon as the fate of the bounty legislation was favorably settled, a circumstance which suggests that the iron and steel interests are pretty well convinced that the Laurier government will do in 1906 as it did in 1897 and 1903—respond to the pressure which the leaders in the industry brought to bear upon it and continue the bounties on iron and steel for at least another five years.

There are now three steel shipbuilding plants on the Canadian shores of the lakes, two at Toronto and one at Collingwood, all importing their frames and plates from the United States. There are no shipbuilding plants either on the Pacific or the Atlantic Coast of Canada; although steel barges have within the last two or three years been built at Pictou, Nova Scotia. When the Tariff Commission was holding its sessions strong representations were made at Victoria, at Halifax and at Sydney in favor of tonnage bounties to encourage the upbuilding of the steel shipbuilding industry; and there is a strong probability that in the bounty legislation which will be submitted by the Government to Parliament in November there will be a concession to these demands from the coast and lake cities. The movement for these bounties has been continued since the hearings of the Tariff Commission came to an end; and at the recent convention of the Canadian Manufacturers' Association at Winnipeg the plea for these bounties was endorsed by the association on the ground that they would bring into existence a new Canadian industry.

#### System in Finding Foundry Costs.

BY D. C. EGGLESTON.

Notwithstanding the advance made in finding costs of production during the last few years it is generally true that the iron foundry has been neglected. Where the attention of cost system experts has been directed toward the iron foundry the tendency has been to try and adapt systems used in other departments. However, the work of the iron foundry is so different in nature from that of other departments that a radical departure must be made from the methods elsewhere employed.

In any iron foundry an analysis of the expense shows that it is incurred in connection with the cupola and several classes of work. The output of the former is in pounds of metal and of the latter in hours of labor. This suggests that the entire cupola expense should be prorated according to the number of pounds of castings produced and the expense against other classes of work on the basis of man-hours worked.

This method requires a division of expense between the cupola and other classes of work. In most cases no difficulty need be experienced in doing this; coke, fire-brick, ladles, lime stone, wood and some water are chargeable to cupola expense. The time of foremen and foremen's clerks should be divided between cupola and other divisions of expense by estimate of the time spent on coke, pig iron, charging sheet and output reports. The administration expense not chargeable to the cupola should be distributed to other classes of work on the basis of the number of man-hours in each. The rent expense includes all charges on account of grounds, buildings, heating, lighting and fire service. This division of expense is distributed on the basis of the number of square feet of floor space occupied by each class of work. Power expense should be distributed by estimate to the various classes of work.

The foundry clerk should keep a card file on which he records tools such as shovels and sieves received, given out (noting to which class of work), and the number on hand. Reference to the file facilitates the distribution of supplies. There are often some items concerning which there is doubt as to just which division of work they should be assessed. In such cases it is necessary to consult the foundry foreman that as accurate a division may be made as possible.

It is the best practice to assign letters indicative of the various rates of expense on the different classes of labor. Thus I. F. A. may be used to denote the rate on core work; I. F. B. on crane molding and so on. The foreman's clerk notes the proper letters on the workman's time ticket so that the expense can be added simultaneously with the productive labor to the cost of the job. To the cost of metal the rate per pound for cupola expense can be added, thus giving the indirect expense incurred in connection with the cupola. The sum of productive labor, labor expense, raw material and cupola expense gives the total cost of producing the castings on an order.

In the statement of shop deliveries the productive labor, raw material and expense accounts should be credited and the piece parts account debited. When the casting is used on an order the piece parts account is credited and the proper account debited. Thus the cost system herewith described not only gives accurate costs of production but also facilitates keeping a check on the work of the iron foundry. If it is desired to cut down expense a study of the exhibit of iron foundry expense will suggest valuable economies. Comparative figures aid in showing wherein the increase or decrease lies. That the system herein described has been evolved to meet the requirements of the iron foundry in a large manufacturing works where it is in successful operation recommends it to the attention of iron foundrymen.

English iron market reports mention a sale of 5000 tons of hematite iron at Millon, Cumberland, for immediate shipment to Baltimore, Md.

### A Large Bliss Drop Hammer.

One of the largest drop hammers ever built is that shown in Fig. 1 herewith. An idea of its size may be had from the fact that it is about four times the height of an average man from the top of the foundation to the top

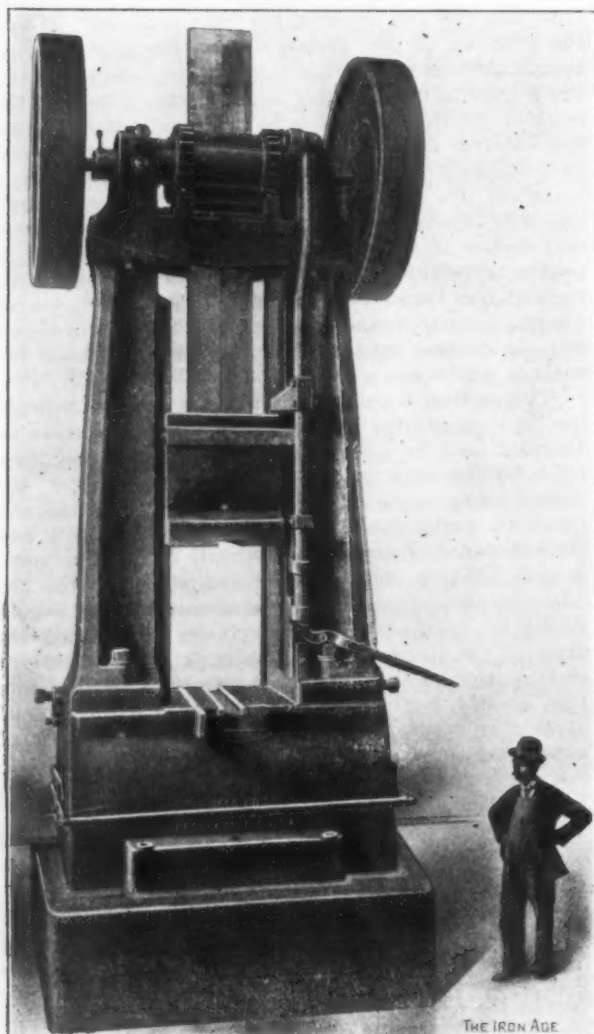


Fig. 1.—A 3000-Lb. Drop Hammer Built by the E. W. Bliss Company, Brooklyn, N. Y.

dimensions. To accommodate the various different pieces that are to be forged in this drop it was made with 31 in. from the front to the back of the die bed. All of the actuating parts are outside of the uprights, so as to leave all space between them available for dies.

A better idea of the lifting rolls may be had from Fig. 2. These rolls are of large diameter and are sufficiently wide to exert enough friction on the board to readily raise the heavy hammer. As will be seen, both pulleys are on the same shaft, which is integral with one of the rolls. The other roll is driven by two sets of steel gears, one on either side of the lifting board. This prevents a torsional strain, warping, or any uneven wear of the board. The forward roll works in an eccentric bearing, which brings it tight against the lifting board when the front lifting rod falls. The lifting rod is raised by the return of the hammer. Continuous or intermittent strokes may be had, as desired, by working the foot treadle.

The hammer is very accurately made, so that in the smaller sizes the finest watch dies could be operated in it, so perfect is the control which the operator has over the force of the blow.

The hammer has a total weight of about 70,000 lb., and was built by the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y.

**Notable Green Blowers.**—Two very large induced draft fans are being built for the power station of the East St. Louis & Suburban Railway Company by the Green Fuel Economizer Company, Matteawan, N. Y. The wheels are 19 ft. 6 in. in diameter and 7 ft. wide at the tips of the blades, and will be driven by Corliss engines. They are overhung; that is, are supported on one side only and are believed to be the largest of this type ever built. Each wheel is carried on a 10-in. steel shaft and has a specially designed two-part spool hub which occupies comparatively little space on the shaft and permits the bearings to be placed close to the center of gravity of the wheel. Each water-cooled bearing weighs over a ton and is considerably larger than those on many of the planing mill exhaustor fans built by this company. The wheels have three-quarter housings of sheet steel. The houses are mounted on 8 x 8 in. foot rails  $\frac{5}{8}$  in. thick.

The Bessemer & Lake Erie Railroad, owned by the United States Steel Corporation, is planning an extension to Buffalo, N. Y. The road at present runs from Braddock, Pa., to Conneaut, Ohio. The corporation will also build another lake port at Fairport, where docks and

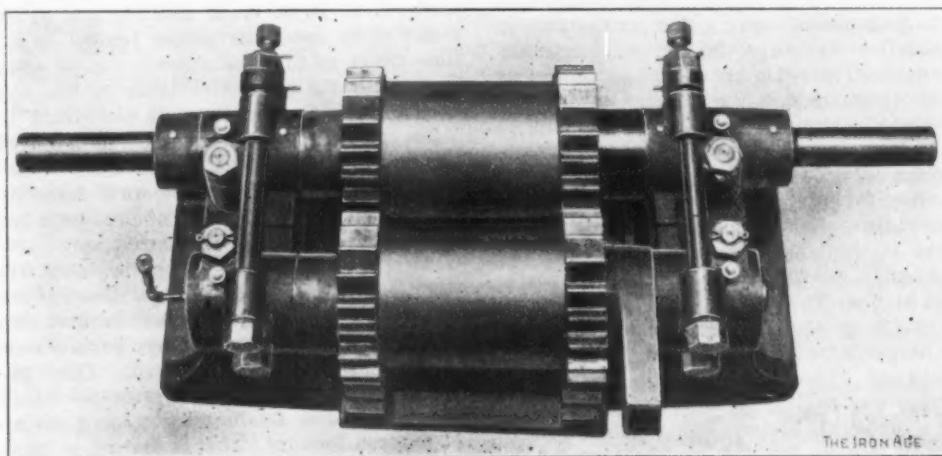


Fig. 2.—Detail of the Lifting Rolls of the 3000-Lb. Bliss Drop Hammer.

of the pulleys. The height of the drop above the floor level is 187 in. The hammer is a steel forging weighing 3000 lb., exclusive of the dies. The anvil weighs over 45,000 lb., and is fitted with a forged steel sow held in place by a very large key. The uprights are 109 in. long and the hammer can be quickly adjusted for any height of fall up to nearly the figure mentioned.

The hammer was specially designed for forging automobile crank shafts and other similar work of large

equipment that will be larger than those at Conneaut, Ohio, will be built. These improvements are necessitated by the purchase of the new iron mines, and the work is to be completed by the time navigation opens next spring.

The Peterborough Steel Rolling Mills Company, Limited, Peterborough, Ont., is negotiating for a site for its proposed new plant at Niagara Falls, Canada. The final terms have not yet been settled.



Natural Gas Production in 1905.

WASHINGTON, D. C., October 23, 1906.—The value of the natural gas produced and sold in the United States in 1905 was \$41,562,855, as compared with \$38,496,760 in 1904, a gain of \$3,066,099, according to the annual report of the United States Geological Survey, compiled by W. T. Griswold. The number of iron mills supplied with natural gas in 1905 was 81 and the number of steel works 90, as compared with 61 and 82, respectively, in 1904.

The increased value in 1905 resulted from a general advance in price rather than from any increase in yield. Out of 16 States in which natural gas is produced, but two show a decrease in value in the year 1905 as compared with 1904. The greatest increase during 1905 was in West Virginia, where the increased value amounted to \$1,961,655 more than the previous year. Louisiana appeared for the first time as a gas producing State. A falling off in value is shown in Indiana, Kentucky and Tennessee. The great gas fields of Indiana have shown a steady decline since 1902, and the value last year was considerably less than one-half of the maximum production.

When natural gas was first brought into use there seemed to be a general idea that the supply was inexhaustible. It was sold at low rates and usually without measurement. This method encouraged waste in the consumption of natural gas, and was shortly abandoned by the larger companies. To-day nearly all consumption is sold by measurement. It is believed that the time has now come when it is possible to procure statistics of the quantity of gas consumed, and next year this will be undertaken. The method will give such figures in the future that a more direct knowledge will be obtained of the capacity of gas areas to maintain a commercial supply of gas for a certain number of years.

Productive Areas.

The known main productive areas of natural gas in the United States are in connection with the great oil fields. In the Appalachian field this area extends along the western slope of the Appalachian Mountains from New York State into Kentucky and Tennessee, with strong probabilities that the future will see it extended into the northern part of Alabama and possibly into Mississippi. The gas is produced from the same porous sandstone and limestone rocks in which the oil is found.

The gas producing area of western Ohio and Indiana derives its gas from the Trenton limestone. This bed has horizons within which are porous and in which are accumulations of salt water, oil and gas.

In Kansas, Oklahoma and Indian Territory large and prolific gas fields are being opened up within the oil bearing formations of that region. This gas is produced from sand rock in all respects similar to that of the Appalachian field, with the probabilities of an extensive and continuous supply.

The great oil fields of Texas and California do not produce natural gas in proportion to their oil production. California, which produced in 1905 a greater quantity of petroleum than any other State of the Union, stands ninth in the list of States in production of natural gas. This is probably caused by the fact that the oil producing formations of California have been much tilted and are often faulty, which condition has caused the formation of vents and cracks, through which large quantities of natural gas have escaped into the atmosphere.

Production and Consumption.

The production of natural gas in the United States in 1905 by States was as follows: Pennsylvania, \$19,197,536; New York, \$623,251; Ohio, \$5,721,462; West Virginia, \$10,075,804; Illinois, \$7223; Indiana, \$3,094,134; Kansas, \$2,261,836; Missouri, \$7390; California, \$133,696; Kentucky and Tennessee, \$237,590; Texas and Alabama, \$14,409; Arkansas and Wyoming, \$21,135; Colorado, \$20,752; South Dakota, \$15,200; Indian Territory and Oklahoma, \$130,137; Louisiana, \$1500; total, \$41,562,855.

The total value of the production of natural gas has

amounted to the sum of \$426,445,206 in the 24 years that this natural resource has been put to commercial use. In 1882 the value of the output was only \$215,000, but in 1888 it had increased to \$42,629,875. From 1888 to 1896 there was a gradual falling off in the total value each year, the aggregate in the last named year being but \$13,002,512. This reduction was due principally to the decrease in the States of Pennsylvania and Ohio. From the year 1896 to the present time the value of the gas produced each year has increased rapidly.

The consumption of natural gas by States does not coincide with production for the reason that much gas produced in one State is consumed in another. The consumption in 1905 by States was as follows: Pennsylvania, \$19,237,218; Ohio, \$10,396,633; West Virginia, \$3,586,608; Indiana, \$3,056,634; New York, \$2,434,894; Kansas, \$2,265,945; Kentucky and Tennessee, \$237,590; California, \$133,696; Indian Territory and Oklahoma, \$126,028; Arkansas and Wyoming, \$21,135; Colorado, \$20,752; South Dakota, \$15,200; Texas and Alabama, \$14,409; Missouri, \$7390; Illinois, \$7223; Louisiana, \$1500; total, \$41,562,855.

It is estimated that the value of the coal, wood or other fuel displaced by gas in 1905 was \$49,690,418, showing an economy of \$8,127,563 in favor of gas.

Uses of Gas.

In the following table are specified the uses to which the natural gas produced in 1905 was put, exclusive of domestic consumption:

State.	Producers re- porting.	Iron mills.	Steel works.	Other establish- ments.	Total.	Gas con- sump- tion.
Pennsylvania	351	43	66	2,736	2,854	443
Ohio	425	14	14	2,927	2,955	1,294
West Virginia	76	14	4	1,399	1,417	150
Indiana	740	5	2	224	231	395
New York	148	..	2	445	447	88
Kansas	171	5	..	596	601	276
Kentucky and Ten- nessee	44	..	1	5	6	53
California	19	..	..	10	10	8
Indian Territory and Oklahoma	42	..	1	39	39	63
Arkansas and Wyo- ming	4	..	..	3	3	3
Colorado	4	..	..	3	3	3
South Dakota	12	..	..	2	2	7
Texas and Alabama	8	..	..	3	3	5
Missouri	25	..	..	3	3	3
Illinois	66	..	..	3	3	3
Louisiana	4	..	..	1	1	..
Totals	2,139	81	90	8,398	8,569	2,794

The foregoing table shows a decrease of 208 companies and individuals supplying gas in 1905, as compared with 1904, and an increase of 2236 manufacturing establishments supplied with gas. There was an increase of 20 iron mills and 8 steel works using gas for fuel in 1905, as compared with 1904. No comparable figures for 1904 covering gas engines and compressors are available.

W. L. C.

**Starting of the Milliken Steel Plant on Staten Island.**—The open hearth furnaces lately completed at the new steel plant of Milliken Brothers, Incorporated, on Staten Island, which have had fires lighted in them for the past two or three weeks, were charged on Wednesday evening, October 24, and the first steel ingots were cast to-day. This marks the starting up of the new plant which will turn out the first structural steel ever made in the city of Greater New York. The blooming mill will commence to operate next week, and soon after that the structural mill will start up. This plant will make a full line of all kinds of rolled structural steel, also steel billets.

The receipt is acknowledged of an invitation from the Youngstown Sheet & Tube Company, Youngstown, Ohio, to a formal inspection of the company's new Bessemer steel plant, plate mills, skelp mills, pipe mills, &c., on Friday, October 26. Arrangements have been made by the company for a special train to leave Cleveland at 10.30 a. m., arriving at the works about noon. It is expected that this invitation will draw a large number of the customers of the company from various parts of the country on this occasion.



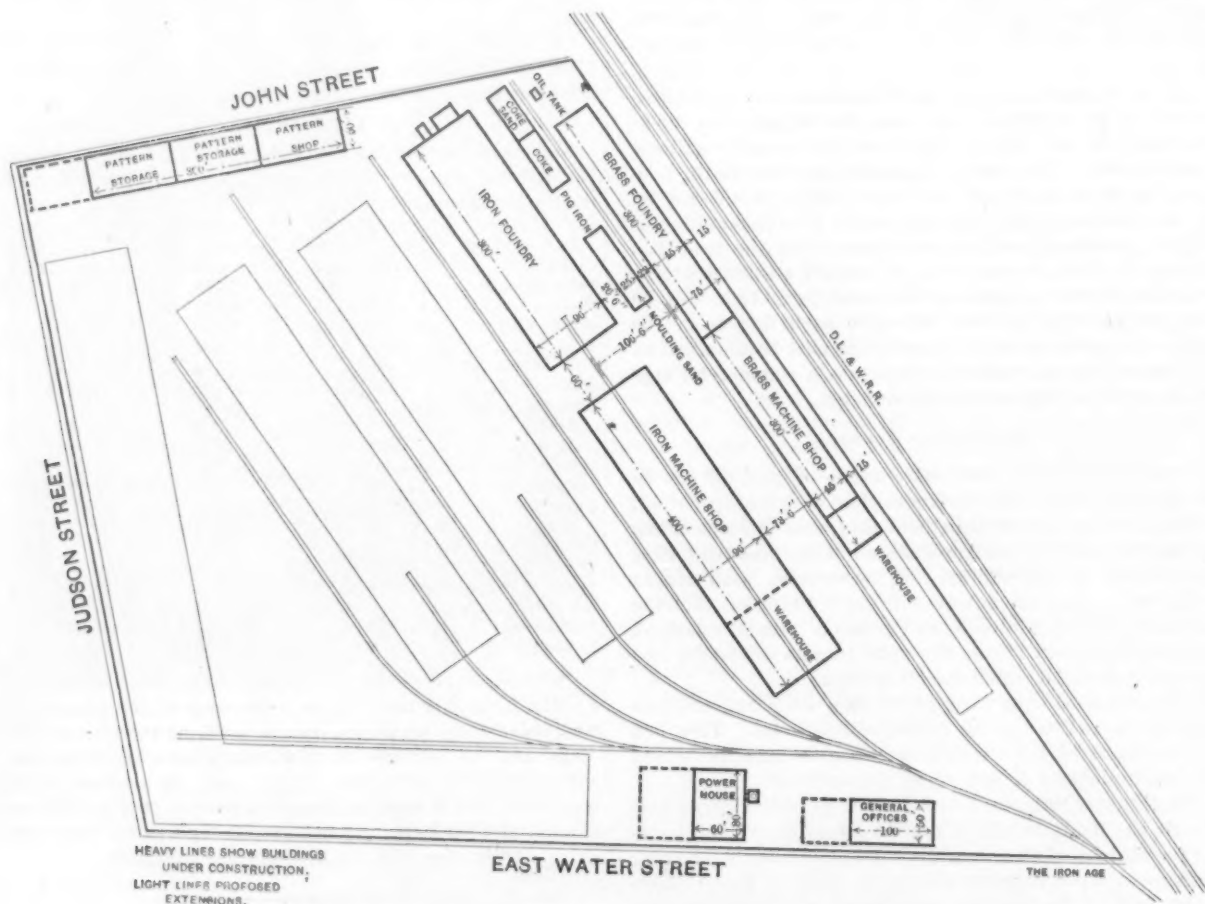
### The Kennedy Valve Mfg. Company's New Plant.

In many respects the construction and equipment of the new plant which the Kennedy Valve Mfg. Company, New York City, is building at Elmira, N. Y., will be unique. They will be such that the constantly improved methods and appurtenances in the manufacture of its product can be easily installed and future extensions made without interfering with the present arrangements, thus enabling each department to expand independently of one another as occasion requires. The industrial track system connecting all departments, the overhead traveling cranes, and the operation of the plant electrically, all contribute to accelerating the progress of work through the shops and make possible a large output.

The new plant, a plan of which is shown in the accompanying engraving, is located at the east end of the city on a site of 22 acres connected by special arrange-

office building. The buildings under way are built with concrete foundation, walls of brick, laid in Portland cement, roof trusses and columns of steel with five-ply asphalt roof, all of modern construction. The pattern shop building is divided into three equal parts by fire walls with fire doors, and all of the buildings will contain modern appliances for fire protection, such as sprinklers, an independent fire-service water system and two independent water supplies. Each building will have its independent lighting, heating, ventilating, electric power, water, steam, compressed air and natural gas systems; each wherever practical will be connected with the main source of supply, which will be in duplicate. The equipment of each building will be selected for its individual need according to the product manufactured.

A factor to be considered in the construction of a new plant, which has here been borne in mind, is future extension. The iron foundry and iron machine shop are exact counterparts, each having the same cross sec-



Plan of the New Plant of the Kennedy Valve Mfg. Company at Elmira, N. Y.

ment with the four trunk lines which run through the city—the Delaware, Lackawanna & Western, Erie, Lehigh Valley and Pennsylvania railroads—thus giving the company excellent shipping facilities. The ground level of that part on which the buildings are being erected, being quite a few feet below the railroad level, enables the floors to be put on the railroad level, and still leave ample space for filling in with foundry and power house refuse. Another advantage is an underground river running through the property near the power house, giving a fine water supply; from tests made a capacity of 2000 gal. per min. was obtained. Independent of this source of supply are two others—the river adjacent, and the city water, which is filtered. The sewer system connects with the main trunk sewer of the city, just outside the property.

The buildings now under construction and nearing completion are the pattern shop and storage building, iron foundry, iron machine shop and warehouse and power house. The other buildings contracted for are the brass foundry, brass machine shop, and general

office building. The buildings under way are built with concrete foundation, walls of brick, laid in Portland cement, roof trusses and columns of steel with five-ply asphalt roof, all of modern construction. The pattern shop building is divided into three equal parts by fire walls with fire doors, and all of the buildings will contain modern appliances for fire protection, such as sprinklers, an independent fire-service water system and two independent water supplies. Each building will have its independent lighting, heating, ventilating, electric power, water, steam, compressed air and natural gas systems; each wherever practical will be connected with the main source of supply, which will be in duplicate. The equipment of each building will be selected for its individual need according to the product manufactured.

The power house, both in equipment and construction, is planned on the unit system, so that future extensions will not interfere with operations, ample provision being made for the maximum probable equipment necessary. At present there is one unit, consisting of a battery of boilers of 500 hp., three high-speed engines, directly connected to 220-volt direct current generators, a duplicate system of feed pumps having three sources of water supply and fire pumps each of 1000 gal. per min. capacity, and one 500-hp. feed water heater taking exhaust steam from the engines and pumps. The equip-

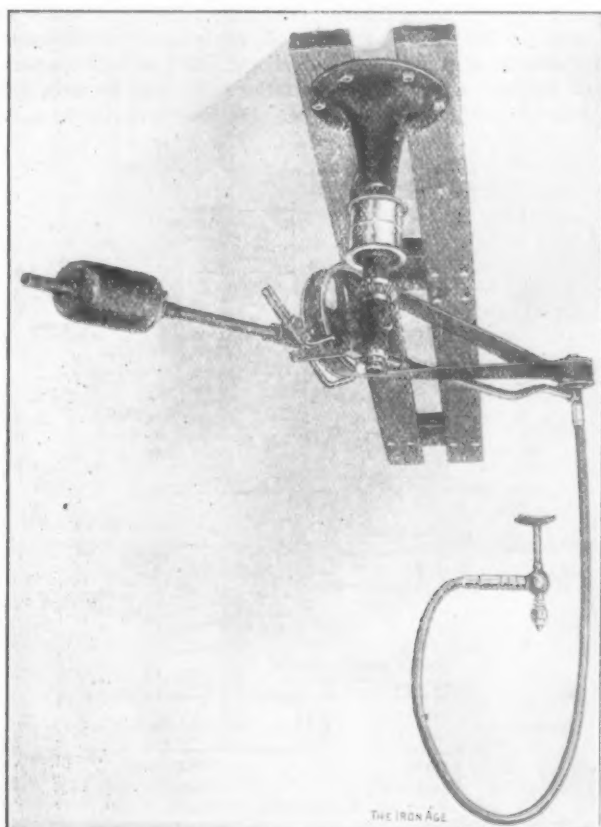
ment also includes economizers and a heating system which uses either the surplus exhaust steam or live steam taken from the main header through a reducing valve.

All the machinery throughout the plant will be motor driven, the motors varying in size from  $3\frac{1}{2}$  to 50 hp., all controlled from a central switchboard in the power house. There is also in the power house a 1000-cu. ft. air compressor supplying the compressed air to the various shops.

For testing purposes a special equipment supplies water up to 1000-lb. pressure and steam at 300-lb. pressure, with a superheater giving a temperature of 500 degrees F.

### The Coates Radial Drill.

When compared with the illustration the title may seem a misnomer, but the manufacturer, the Coates Clipper Company, Worcester, Mass., has given the device



A Suspended Universal Radial Drill, Manufactured by the Coates Clipper Company, Worcester, Mass.

that name, and all things considered it seems to be justifiable. All of the fundamental principles of a radial drill, such as one is accustomed to see standing on the shop floor, are to be found in this tool, and some others besides. While it is not adapted to the heavy work usually imposed on a standard radial drill it is nevertheless powerful enough to drill a  $\frac{1}{2}$ -in. hole in steel, and moreover it can drill it at any conceivable angle.

When the arm is up the flexible shaft which drives the drill is idle; when the arm is pulled down the flexible shaft is driving. Just below the standard, which is bolted to the ceiling, is a tight and loose pulley. The action of the arm as it is raised or lowered shifts the belt from the tight to the loose pulley, or vice versa. The shipper, which moves the belt from one pulley to the other, is fastened to a central spindle extending through the standard and connected at its lower end with a shipper arm the movement of which is caused by the shipper dogs. The shipper arm moves the central spindle up or down, operating the shipper. The counterbalance weight on the arm may be adjusted to different weights of flexible shafting. The drive of the flexible shaft is through bevel gears from the pulley shaft to a pulley which is belted to a pulley on the driving shaft. The

radial arm which pivots through a complete circle enables the operator to do work over a considerable floor area. With the breast drill attachment the drill may be put to a wide variety of uses in many shops, and especially in the manufacture of automobiles and carriages.

### The Hamilton-Holzwarth Turbine in Germany.

The Hooven, Owens, Rentschler Company, Hamilton, Ohio, has licensed the Felten-Guilleaume, Lahmeyer Werke Company, Frankfort-on-the-Main, Germany, to build the Hamilton-Holzwarth turbine throughout Germany. The latter company is one of the largest electrical concerns of Germany, having a capital of \$20,000,000, and occupies the same position abroad as the General Electric and Westinghouse companies do in America. It manufactures water and steam turbines, wire cables, generators, motors and all classes of electrical machinery, having recently bought the control of the Escher, Wyes Company, Zurich, Switzerland, thus controlling the Zoelly Steam Turbine Syndicate of Germany.

The Felten-Guilleaume, Lahmeyer Werke Company has taken up the manufacture of the Hamilton-Holzwarth turbine after a very careful investigation of the different steam turbines that have thus far been invented and after a series of most careful tests on this particular type of machine made at the University of Darmstadt. The acceptance of the turbine was made on a basis of its being proved equal to or better than any turbine of the same size and speed in operation in Europe. A result of the tests referred to above will shortly be ready for publication.

The Hooven, Owens, Rentschler Company has a duplicate of this machine at its works, which has also been tested and is ready for immediate shipment; this turbine is of the 500-kw. size, three-phase, 60-cycle, 2300-volt, adapted for 1800 rev. per min.

### The American Brass Founders' Association.

The movement started at the Cleveland convention of the American Foundrymen's Association last year for the organization of the American Brass Founders' Association as an affiliated society has taken form. Charles J. Caley, general superintendent of the Russell & Erwin Mfg. Company, New Britain, Conn., as chairman, and Dr. Richard Moldenke as secretary of the committee appointed at Cleveland, have issued a circular to the brass founders of the country soliciting memberships in the new organization and suggesting that the benefits that have been secured to the iron founders through the existing association may be extended also to firms working in brass, bronze, aluminum and other metals. The brass interests are asked to participate in the Philadelphia convention in May, 1907, at which the new organization will be perfected. Applications for membership are to be addressed to Secretary Richard Moldenke, Watchung, N. J.

The N. & G. Taylor Company, Philadelphia, has made an important change in the name of its leading brand of roofing tin. This brand has been known in recent years as Taylor Old Style. Hereafter it will be known as the Target and Arrow Old Style, which is the name used many years ago. The change is a return to the old time designation for the tin as the plates have always been distinguished by the registered trademark of the target and arrow stamped on the sheets. The trademark for the brand therefore remains the same as formerly. The roofing tin on which this stamp appears is exactly the same old time durable quality which the Taylor Company has been selling for more than 60 years and represents the kind of tin plate which it furnished and is still to be found in good condition on roofs in the older cities in this country after 50 and 60 years' wear. The high standard for materials and manufacture established in the early days of the business is still maintained in this heavily-coated hand-made plate. It is a significant fact that this tin had already made a record for long-time service before any other brands now on the market were offered for use.

## Blast Furnace Blowing Engines.\*

BY DAVID E. ROBERTS.

In the early days of machines for blowing air, hollow reeds, bamboos, the tromp and other primitive means had their important uses. In tracing a brief history of the development of such machines, probably the goat-skin will make the best starting point. Among Eastern nations ages ago the goat skin, inflated by hand and compressed by the feet, was used for blowing purposes, and in the more backward districts it is still to be found. The addition of two boards made a distinct improvement and brought about the bellows. This must be looked upon as the first really practical form of blow-

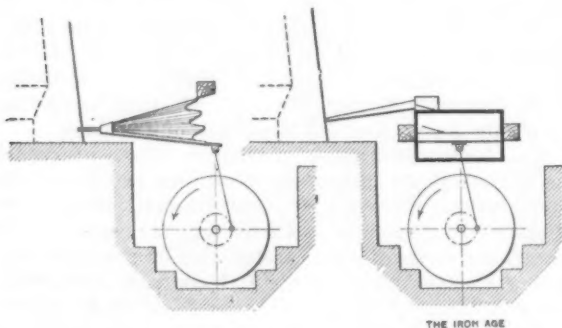


Fig. 1.—Early Bellows Blowing Machine.

Fig. 2.—Early Piston Blowing Machine.

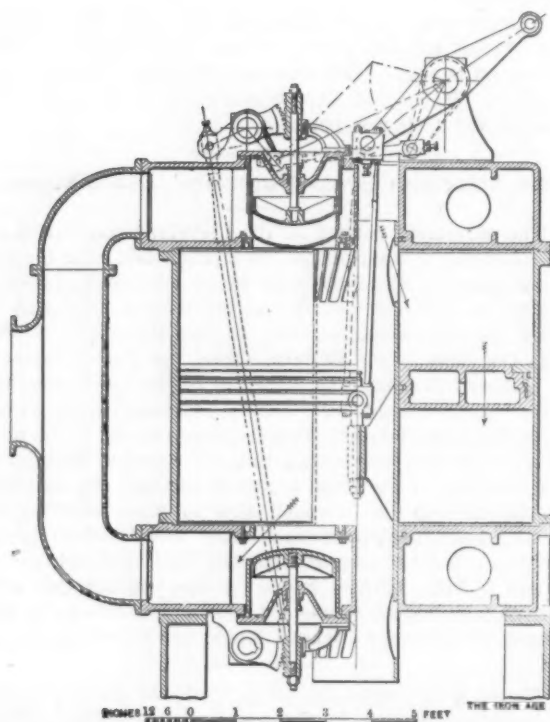


Fig. 3.—Blowing Cylinder Fitted with Kennedy-Reynolds Valve Gear.

ing machine. Driven by a water wheel fitted with an inlet and outlet valve, as shown in Fig. 1, it was used in the early days of blast furnaces. In actual operation its leather sides would be subject to continual repair, and possibly that trouble brought about the next step in advance, shown in Fig. 2, in which the bottom board of the bellows is made to work as a piston, still carrying the inlet valve.

In this early type both the piston and the inverted tub were made square and of timber, the latter being built up of staves. This is really only a very small step from the bellows, and following upon it came the idea of making the piston operative on the down stroke and consequently the closing of the bottom end of the tub

and the removal of the inlet valve to the cover. A little later the piston and tub were made of cast iron and cylindrical, and to this latter stage of development the blowing machine had reached towards the end of the eighteenth century.

### Early Valve Types.

The old leather flap valves, strengthened by iron straps and closing against a gridiron face, have retained their identity from the early days of the bellows through all the changes and are to be found to-day in many of the older engines. Their action is entirely automatic; and although attempts have been made, both by springs and counterweights, to close these valves more accurately at the dead points they have been somewhat of a preventive to high speeds and high pressures.

It was recognized as early as the year 1850 by Archibald Slate that to enable a blowing engine to run at a fairly high speed without serious shocks the valves had to be positively controlled, opened and closed at the exact instant necessary. Mr. Slate first of all experimented with an ordinary plain slide valve and achieved considerable success, running his engine at a piston speed of 600 ft. a minute without shock. The serious amount of friction, however, between the valve and its face led him to consider another type. He conceived the idea of

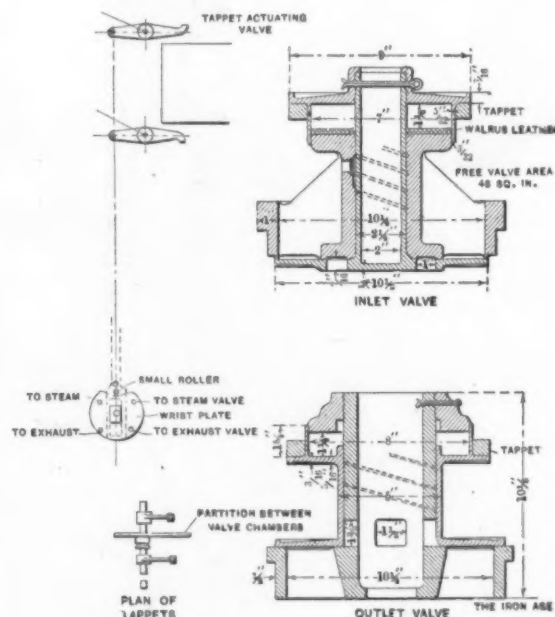


Fig. 4.—Riedler Valves.

constructing a cylinder having an annular valve embracing the cylinder like a sleeve and sliding upon it. It was operated through special gearing from eccentrics upon the engine crank shaft. This arrangement he patented, and in 1853 several engines were built upon this design. It may be mentioned in passing that a modification of this arrangement was adopted with success a few years ago by Edward Slick in America for use in compressors, and the design is now being applied to furnace blowing engines.

Probably the next step in this direction was the introduction of the ordinary piston valve in the well-known Bessemer blowing engine of Daniel Adamson about the year 1870. This engine, as is well known, worked upon the whole satisfactorily. When, however, one valve is used for both inlet and outlet it is almost impossible to fix upon a combination of port width, lap of valve, stroke, &c., that will give the best conditions for both the incoming and outgoing air. Taking into consideration this difficulty, the next step in advance was one of considerable importance. It was the provision of separate and distinct inlet and outlet valves, each operated by independent mechanism. There are several examples of this latter improvement now in every day use, and a brief description, with drawing, is given of a few of the best known.

\* A paper read before the Institution of Mechanical Engineers at Cardiff, Wales.



## More Recent Forms of Valve Gear.

Fig. 3 shows the Kennedy-Reynolds gear. The inlet, or Kennedy valve, is a hollow cast iron tube passing through the center of the cylinder. The outlet or Reynolds valve is cup shaped, of thin steel plate, and is floating. It is positively closed by an internal plunger, but is free to open automatically. This gear is well known in America and gives good results. The trunk valve is

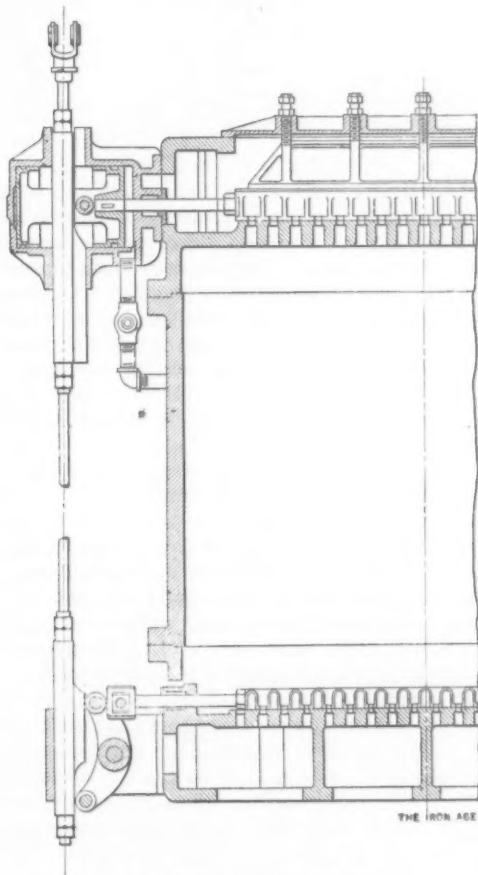


Fig. 3.—Southwark Valve.

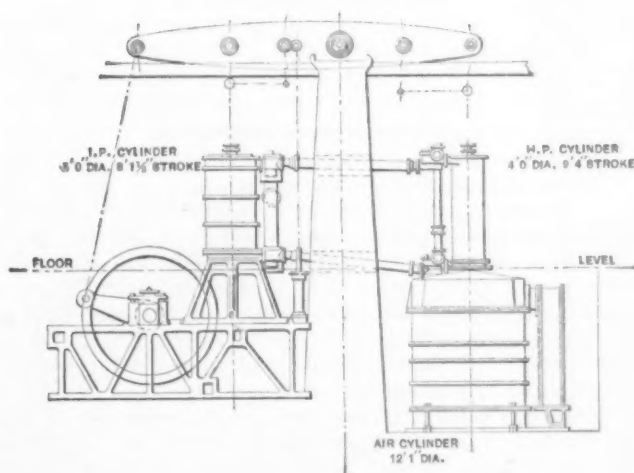


Fig. 4.—Old Dowlais Blowing Engine, About 1830.—Triple Expansion Arrangement.

somewhat objectionable and will allow some leakage, cause rubbing friction, and it necessitates the use of two piston rods.

Fig. 4 shows the Riedler valve as used in compressors, which is pretty well known in this country, especially in dealing with high pressures, and has been subject to severe tests at high speeds. The inlet and outlet valves are large in diameter, have narrow beats and the minimum of air friction. Their operating mechanism gives splendid control and is capable of easy adjustment.

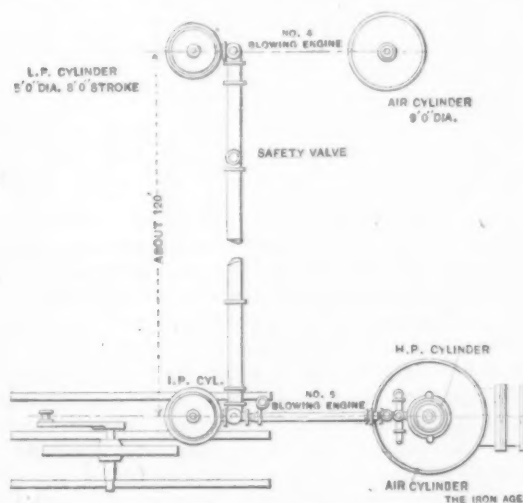
Fig. 5 shows the Southwark valve, which is also becoming well known. It is composed of gridiron shaped slides which move upon the top and bottom covers. They are so designed that there is little rubbing friction be-

cause the valve is slightly lifted from its seat by the air at the instant of moving. The clearance space, too, is reduced to a minimum. The valve gives a large opening with small travel. The early form of this type of valve, still in use in the United States upon horizontal engines, instead of being made rectangular and sliding straight across the cylinder head was made fan shaped and rotated backwards and forwards around the rod.

The Slick valve gear, as described to the author, is applied to horizontal engines and is peculiar from the fact that the air cylinder itself is given a certain amount of reciprocating motion. The cylinder heads are stationary and are bolted securely to the engine bedding, and they embrace with a working fit the barrel portion of the air cylinder. This latter has near each end of it an annular port, which is the inlet for the air, and this port is covered and uncovered as the barrel moves into and out of the cylinder heads. The outlet valves are merely spring loaded disks arranged upon the two stationary heads. The advantage claimed for this cylinder is that it can be effectively filled with free air when running at excessive speeds. In some engines the air on its way to the cylinder, coming into contact with the heated surfaces of the inlet valve and port, is thereby expanded, and the above difficulty results at high speeds and is slightly intensified with valves which split up the flow into a number of small streams. In the case of the Slick valve this failing certainly is reduced to a minimum, for the air has only to find its way through a port the length of which is but the thickness of a working barrel and which is exposed around its circumference to the cooling action of the atmosphere. The disadvantage of this engine appears to be the large amount of power that must necessarily be required to give motion to the working barrel.

## Positive and Automatic Valves.

While for the higher pressures and speeds some one of the positive valve movements described above may be necessary, yet for the lower pressures of, say, 8 lb. or 10 lb., it is quite open to argument whether automatic valves are not almost equally effective. Positive valves discount some of their advantages by their cost and upkeep, their complication and danger of breakdown, the accurate adjustment necessary and the power required



to drive them. There are many excellent examples of engines giving high efficiency and fair speeds using automatic valves as still built by some of our best English makers. It has been authoritatively stated "that cards from blowing cylinders show that makers are rapidly approaching theoretical perfection in their construction." While this is to an extent true, it does not necessarily result that because compression follows the isothermal line the cylinder is doing excellent work. This will sometimes be found upon investigation to be due to the fact that the cylinder has not been properly filled with air or may result from leakage during compression. In that way an excellent looking card may be sometimes misleading.

### Some Historic Beam Type Engines.

With regard to the general arrangement of the cylinders, framings, &c., of blowing engines, while, as pointed out, the earliest stage was probably some system of tub connected to a water wheel, considerable influence was exerted upon this, as upon all other designs of engines, by the perfecting of the steam engine by Watt in the latter part of the eighteenth century.

The first practical design of steam blowing engine was of the beam type, and that particular type has done good service ever since, and to-day will be found in some of our older works still usefully employed. A good example is still to be seen working at Dowlais. This engine has a blowing cylinder 12 ft. in diameter with a 12-ft. stroke. It was built in 1855 and is still running, under the present management of William Evans. It has been engaged partly in blowing a furnace that has been at work regularly and without intermission for the last 26 years and is still working. The furnace has made up to the present well over three-quarters of a million tons of pig iron upon its existing lining.

Another interesting blowing engine, or, rather, combination of blowing engines, existed at Dowlais until a few years ago. This was a triple expansion arrangement, and Fig. 6 is produced from the old drawings of it. It was put to work about 76 years ago and was probably an example of working expansively in separate cylinders which antedated by some years the general introduction of the system.

### The Steeple Type.

Although the beam type of engine was justly popular for many years, yet as the demands for higher air pressures and greater speeds arose there was a tendency to more directness of design than was obtainable through the medium of a beam; and although engines of many varieties have been built, in the process of time the steeple type has been evolved and has become almost a standard.

One recent well-known modification to give a shorter and sturdier engine and thus prevent vibration at high speeds is what is called the quarter-crank system. In an ordinary steeple engine one entire deck of cylinders is, so to speak, planted adjacently upon a separate and independent pair of standards. This system has advantages in the way of facilitating repairs to pistons and rods and in preventing stoppage of the whole engine from the breakdown of one portion. Also, owing to the relative crank displacement adopted, the loads in the steam and air cylinders are better timed and balanced and an even turning moment results. The disadvantage of the system is that all stress goes through the crank shaft, none direct, and the engine takes up a great deal of room.

### Gas Blowing Engines.

Two other developments of recent times are the blast furnace gas blowing engine and the turbo blower. It was in 1894 that attention began to be attracted to the use of blast furnace gas in gas engines and the following years saw its first application at Wishaw for the purpose of driving a dynamo. Since then large sizes have been made, and recently numbers have been applied to blowing purposes, some in England and more on the Continent. American steel makers also, although, with the exception of one or two not very fortunate examples, they have held aloof from this departure for some time, are now proceeding to adopt them in considerable numbers. There are many types of such engines, both two-cycle and four-cycle, each with its special advantages and disadvantages. Without doubt something like four times the actual work can be got out of furnace gas when used through a gas engine as compared with the ordinary method of using it under boilers; and in the future the gas engine should have no real competitor for blast furnace blowing. However, the upkeep of gas engines in this country is at present heavy, repairs costly and lubrication excessive, the running cost of water cooling and gas cleaning plant high, as also is the first cost. Gas cleaning has always been one of the standing troubles with gas engine work. This can now be effectually done, however, by rotary washers, of which

there are several good designs in use that reduce the quantity of dust to a negligible amount.

It is estimated that by using gas direct in blowing engines about 30 per cent. of the total gas given off by the furnace will be available outside the plant itself, and where the same is marketable it should form a valuable asset. Upon a modern plant making 2000 tons a week the spare power should amount to about 1000 hp. continuously. Irrespective of the troubles mentioned earlier this saving will probably bring the gas engine into general use for blowing purposes in the future. Greater experience and improved design will doubtless make these engines just as reliable as the small gas engine in everyday use, which, as is well known, runs over long periods satisfactorily with little attention.

### Advantages of the Turbine.

The turbine, though not so economical as the gas engine, and, due to the eddying effects of steam, no more economical than a high class steam engine, nevertheless has many advantages. Its first cost is less than for a reciprocating engine of equivalent power. It takes very little room and the outlay upon house and foundation is small. A point of value in the turbine and one, perhaps, not generally recognized and appreciated, is the absolute steadiness of the flow of air. This is an important point and some furnace managers attribute to it considerable improvement in the working of their furnaces. From the earliest times steadiness of the air has been aimed at by the use of large mains, reservoirs, loaded pistons, water regulators, &c., but it is only perfectly obtained in the turbine blower. The running cost is very slight, there is practically no friction and a very small oil bill, and the oil that is used need not be chosen with that care which is necessary with oil to be put into the cylinders of an ordinary engine. There is also the advantage of an oilless exhaust for condensing.

With regard to steam economy, in ordinary engines live steam is continually thrown against surfaces just cooled by the exhaust, and in older engines, with ports common to both inlet and outlet, the resulting loss is intensified. In turbines the steam is brought into contact with metal approximately the same temperature as itself. Then, again, there is a certain amount of leakage always taking place past the working valves of a steam engine, which amount has been recently set down as somewhat excessive. Losses that have in past years been attributed to condensation are now stated by experimenters to be largely due to leakage past the cylinder valves. The only leakage that can take place in the turbine is that going on through the blades.

### The Choice of Engines.

It is not easy to state or even suggest general rules for the choice of a blast furnace blowing engine. Sets of conditions can be found to which the ordinary steam reciprocating blowing engine is best suited, and this is also true with regard to the gas engine and the turbine. If the surplus gas from any given plant is in great demand and can be used effectively on the spot then gas engines have a great claim to consideration. On the other hand there is probably no special advantage to be gained if this surplus gas cannot be so dealt with, although there are cases where the surplus gas is beneficially used for generation of electric power, the sale of which is an offset to the working cost of the furnaces. It is hardly, under any circumstances, wise to apply gas engines to an isolated furnace unless the expense of a gasometer and producers is permitted.

For augmenting the blowing power of an existing plant the turbine will be found well suited, and in many instances it can be applied without need of any further accommodation than the spare room frequently to be found inside many existing engine houses. The turbine in combination with ordinary reciprocating steam engines provides a system both safe and satisfactory and one that is in many ways ideal; for if there is one weak feature in the turbine it is that of not being quite a "positive" blower, and there is also a slight falling away in volume and efficiency when the pressure increases above the "normal," as results from a "standing" furnace.



A point about blowing engines which possibly does not receive the attention it should is the correct ratio between the areas of the steam and blowing cylinders. Each locality, from its own conditions of material, such as fineness of ore, hardness of coke, height of furnace, speed of driving, &c., demands a certain normal air pressure, which it is found prevails almost continually. The pressure will differ somewhat between one district and another. The blowing engine should be so designed, having regard to the steam supply available, as to be giving its greatest economy when blowing this normal pressure, special arrangements being made for dealing with the occasional increases of pressure that arise in steam engines by retarding the cut-off, and in gas engines by manipulation of the air inlet valve or adjustment of the clearance space. This, however, in the opinion of the author, is not usually the case, and most modern engines will be found so proportioned as to be giving their greatest economy, not when working upon the normal pressure, but when working at a higher pressure than the normal, and one which occurs only occasionally. In most of the old engines the reverse of this was found; and possibly the constant grievance of the furnace manager, in not being able to obtain his "pillar" (pressure of blast), has been in a measure the cause of this over-reaching movement in the opposite direction.

### New Publications.

**Steam Turbines and Turbo-Compressors, Their Design and Construction.** By Frank Foster, M.Sc. Size,  $5\frac{1}{2} \times 8\frac{1}{2}$  in.; pages, 449; illustrations, 240. Price, 10s. 6d. Publisher, The Scientific Publishing Company, Manchester.

A peculiar object induced the author to prepare this book. Steam turbines are a relatively new type of prime mover, and no great amount of matter on them has yet been published in book form. The author's intention has been to treat of the subject in a somewhat different style from anything that has thus far appeared. He states his belief in a need for a book on steam turbines which will not be simply a popular description of existing machines, nor yet a mathematical treatise, and which will not be a mere compilation from the patent records. Theory is not predominant, but in every particular the book has been made to appeal to the practical engineer. For example, it is pointed out that all round commercial efficiency is the important thing, and not the thermal or mechanical efficiencies. The book is not one, however, that should fail to interest students, merely because it bases its economic considerations on dollars and cents, primarily. It is generally from the lack of such consideration that the technically educated seem to suffer.

Following an introduction on the fundamental principles of the different types of turbines, the author launches into a description of the types which have now obtained commercial importance, and the remainder of the book is given to details, such as nozzles, blades, methods of governing, bearings, auxiliaries, and marine turbines, turbo-compressors and gas turbines. Most of the subject matter is original. In particular may be mentioned two new diagrams, one for steam and one for gas engines, which it is believed will be found useful in turbine design, a general method of determining the critical speed of any kind of a rotor, and a method of determining the best vacuum in the condenser of a turbine or a reciprocating engine under any given conditions of load and price of coal. An appendix contains such useful information as specific heats and coefficients of expansion, properties of gases, expansion curves, velocities in nozzles, discharge from nozzles, velocities, available work in steam and properties of steam.

**Brazing and Soldering.**—By James F. Hobart. Publisher, the Derry-Collard Company, 109 Liberty street, New York. Paper, 40 pages. Price, 25 cents.

This publication is No. 5 of a series of practical papers published by the company named. It gives full instructions on brazing and soldering, with 16 illustrations, mak-

ing the various processes perfectly clear. The claim is made that this little book contains more real information on the subject than can be found elsewhere.

**Special Reports of the Census Office, Electrical Industries, 1902.** Issued by the Department of Commerce and Labor, Bureau of the Census, S. N. D. North, Director. Size,  $9 \times 12\frac{1}{2}$  in.; pages, 822, exclusive of illustrations. Cloth.

This immense volume is divided into three parts, Central Electric Light and Power Stations, Street and Electric Railways, and Telephones and Telegraphs. The first and second were prepared under the supervision of W. M. Steuart, Chief Statistician for Manufactures. The first division covers scope and method of investigation; summary and analysis of results; financial operations; employees, salaries and wages; physical equipment; output of stations; franchises, and history and development of electric lighting. The report proper, prepared by Thomas C. Martin, covers 104 pages, and includes 64 tables. To this are added 34 general tables, two appendices and an index, bringing the total number of pages up to 174, exclusive of some 24 illustrations.

The second division is subdivided into two parts, Part I being prepared by Edward D. Durand, and Part II by T. C. Martin, both expert special agents. Part I has as chapter headings: Scope and method of investigation; comparison with census of 1890; traffic; capitalization; financial operations; employees, salaries and wages; interurban railways—economic, financial and social features; consolidation of street railways; franchises, public regulation and public ownership, and street railways in European countries; and Part II, history and development of electric traction; roadbed, track, and electric construction; cars and miscellaneous equipment; interurban railway construction and equipment, and power-houses, equipment and output. There are 98 tables, 6 supplementary tables, 2 appendices and 30 illustrations. A very complete alphabetical index is appended, and the total number of pages of this report is 439.

The third division, dealing with telephones and telegraphs, is subdivided into three parts: Part I, telephones; Part II, telegraphs, and Part III, municipal electric fire alarm and police patrol systems. The headings under Part I are general statistics; general telephone statistics; telephone capitalization; revenue and expenses; telephone traffic; apparatus of the substation; the wire plant central office or exchange; employees, salaries and wages; development of the message rate plan in New York City; history and development of telephony, and telephony in foreign countries. The headings under Part II are: telegraph and cable systems; governmental telegraph and telephone service; and the history and development of telegraphy. Part III is a chapter by itself. There are 51 tables pertaining to telephones, 10 pertaining to telegraphs, and 16 pertaining to municipal electric fire alarm and police patrol systems, with 2 appendices, 37 illustrations and 5 diagrams, making the total number of pages 172.

**Die Eisenindustrie (The Iron Industry).** By Oscar Simmersbach. Published by B. G. Tellbner, Leipzig. Price, 7.20 marks.

Mr. Simmersbach, who is a well-known writer on technical and commercial matters bearing on the iron industry, has undertaken to write a book designed more particularly to aid the merchant. The first section presents, in a fairly popular manner, the technical side of iron manufacture, with special reference to commercial considerations. This is followed by a review of the ordinary tests of materials. The bulk of the work is given to a presentation of the world's commerce in ores, coal and coke, pig iron, castings and finished iron and steel. This section is largely statistical, but it deals also with prices, freights, quality, &c. As the first serious attempt in this direction the work is welcome, although it does not come to our ideal of such an undertaking, since there are many points bearing on market conditions and influences in different parts of the world which might be given due consideration.



# THE IRON AGE

1855-1906.

New York, Thursday, October 25, 1906.

DAVID WILLIAMS COMPANY,	"	"	"	"	"	"	PUBLISHER
CHARLES KIRCHHOFF,	"	"	"	"	"	"	} EDITORS
GEO. W. COPE,	"	"	"	"	"	"	
A. I. FINDLEY,	"	"	"	"	"	"	
RICHARD R. WILLIAMS,	"	"	"	"	"	"	HARDWARE EDITOR

### Vacancies in the Rolling Mill List.

That the iron and steel consolidations have made lavish outlays on improvements and new construction is one of the most conspicuous developments of the past seven years of iron trade history. This has been alluded to as the process of squeezing the water from the original capitalization. No other equal period in the history of the industry could have been so propitious for such an operation. The reactions of 1900 and 1904 were not so serious as to prevent the seven years from making a record for earnings, along with an even more remarkable record of increase in production. In the case of the United States Steel Corporation the appropriations for new construction and for additional properties were \$82,327,364 up to the middle of this year, while the expenditures for ordinary maintenance and repair to the close of 1905 were \$85,207,759 and for extraordinary replacements \$42,464,584. The total of these three amounts, \$209,999,707, compares with an aggregate of \$209,275,989 disbursed as dividends since the corporation was formed.

What the Steel Corporation has done in this direction may not be a basis for estimating the amounts expended by other iron and steel companies, but it is an index to the general movement. There has been a vast amount of concentration at the most advantageous producing centers, and with it the abandonment of antiquated or poorly located plants. This last, indeed, has been more of a factor in the readjustment of balance sheets than has been commonly supposed. Probably no more striking example is to be found than in the record made by the Republic Iron & Steel Company since its organization on May 1, 1899. In the report of the company for the fiscal year ending June 30, 1906, issued last week, the following list of plants is given:

*Active Works, 1906.*

Inland Works, East Chicago, Ind.  
Corns Works, Massillon, Ohio.  
Mahoning Valley Works, Youngstown, Ohio.  
Youngstown Steel Works, Youngstown, Ohio.  
Birmingham Works, Birmingham, Ala.  
Toledo Works, Toledo, Ohio.  
Sylvan Works, Moline, Ill.  
Tudor Works, East St. Louis, Ill.  
Brown-Bonnell Works, Youngstown, Ohio.  
Indiana Works, Muncie, Ind.  
Alabama Works, Gate City, Ala.  
Turnbuckle Works, Brazil, Ind.  
Shafting Works, Youngstown, Ohio.

*Inactive Works, 1906.*

Springfield Works, Springfield, Ill.  
Mitchell-Tranter Works, Covington, Ky.

When it is recalled that more than 30 rolling mills were included in the announcement of the formation of the company, the above list is most suggestive. The missing mills, as obtained from the underwriters' prospectus of 1899, are as follows:

*Works Acquired in 1899, Not Listed in 1906.*

Andrews Works, Haselton, Ohio.  
Leetonia Works, Leetonia, Ohio.  
Cleveland Works, Cleveland, Ohio.  
Eagle Works, Ironton, Ohio.  
Muncie Works, Muncie, Ind.

White River Works, Muncie, Ind.  
Alexandria Works, Alexandria, Ind.  
Marion Works, Marion, Ind.  
Westerman Works, Marion, Ind.  
Wetherald Works, Frankton, Ind.  
New Albany Works, New Albany, Ind.  
Wabash Works, Terre Haute, Ind.  
Terre Haute Works, Terre Haute, Ind.  
Peoria Works, Peoria, Ill.  
Williams Works, Muscatine, Ill.  
Sharon Works, Sharon, Pa.  
Minnesota Iron Works, Columbia Heights, Minn.

It will be noticed that the list of active mills contains the names of 12, the shafting works being attached to the Mahoning Valley mill. Two plants are put down as inactive. Considering the pressure now upon the iron trade the presumption is that a more favorable time than the present for operating these two mills is not likely soon to come. Referring to the mills with which the company started out in 1899 but that are absent from its list to-day, the mortality is seen to have been heavy. No less than 17 iron rolling mills known to the trade in 1899 have been wiped out of existence. In some cases there has been a concentration of rolling outfits and not a little equipment has been transferred to more favorably located plants. In other cases roll trains and machinery that had been operated for years were scrapped. But the practical outcome of the movement is that the bar iron industry of the Middle West that for years was plagued by the competition of weak and unfit mills, many of them living on the verge of receiverships, has been lifted to a plane of efficiency never known before. It is true that some features of the industry are still quite short of ideal; but it is not to be expected that great improvement will be made in these particulars as long as there is so large a dependence upon scrap as raw material. The business of collecting and marketing old material is one of such diverse and peculiar ramifications as to become oftentimes a law to itself. In the case of the Republic Iron & Steel Company one of the factors in its improved condition is the extent to which it has been able to shift to a steel basis through the erection of its large Bessemer plant at Youngstown, Ohio, with control of all necessary raw materials.

It must be said that the assortment of weak and badly located mills brought together by the promoters of the Republic Iron & Steel Company formed a much larger percentage of the whole than was included in other consolidations; but that fact only emphasizes the opportunities of rehabilitation and of correcting the accumulated mistakes and ailments of years, that have come to the iron trade through the joint régime of consolidation and prosperity.

## Great Britain's Iron Ore Resources.

An interesting discussion of certain features of the iron trade recently appeared in the London *Daily News*. It was started by the publication in that paper of an article by L. G. Chiozza Money, a member of Parliament, who took as his subject "The Iron Scepter—Once British, Now American." Referring to the fact that this country now produces more than twice as much iron as the United Kingdom, while Germany comes second among the world's great producers, he recalled that only 30 years ago Great Britain was first and the others were nowhere, the condition of economic iron production then being overwhelmingly in Britain's favor.

He stated, however, that the British iron and steel industry appears to have taken a new lease of life in the last year or two. There was no question that in the closing years of the past century the British iron trade

was "resting on its oars," allowing its plant to become obsolete and its methods behind the times. At the present moment the United Kingdom still contains many old-fashioned plants in unsuitable localities, but the last few years have witnessed a very welcome awakening, and after remaining practically stagnant for 20 years British iron production has again rapidly advanced, the figures of 1905 having beaten the best previous year's record. Mr. Money continues: "Nothing we can do, however, will bring back the iron scepter. Our 40,000,000 people may, head for head, acquit themselves worthily, but the 60,000,000 people of Germany and the 80,000,000 people of America will probably while iron rules continue to lead us in the world of iron. . . . But what of the world without iron, which is soon to come? The world is careless of its resources and we are using up iron at a prodigious rate. . . . It is likely that in about 30 years' time will be witnessed a great appreciation of iron prices, leading to an iron famine. Our own case appears to be worse than that of either Germany or America. We are increasingly dependent on imported iron ore."

Another member of Parliament, Arnold Lupton, answers Mr. Money with the assertion that Great Britain contains iron ore enough to last for 1000 years without any interruption. He says: "The iron mines now at work are only the best; that is, those having the best quality or the most cheaply got ore. When these mines begin to show signs of exhaustion second quality mines will be opened up, and when they are getting used up then third quality mines, and so on. Of course the cost of the ore will increase per ton of pig iron and consequently the price. I know one district of England which by itself is capable of supplying iron ore at our present rate of production of pig iron in the United Kingdom for 200 years. This will make iron of the best quality. Forty years ago the iron ore mines in the coal measures of Yorkshire, Derbyshire and Nottinghamshire were in full swing. Thirty years ago they were, with trifling exceptions, closed because cheaper iron ore had cut them out of the market. If the price of pig iron rises once again to its former figure and the cheaper iron mines are exhausted, then these mines can be reopened and the three countries I have named could produce 9,000,000 tons of pig iron a year from their own ores for 200 years. There are other counties in Great Britain also possessing enormous quantities of iron ore."

Evidently, there are those in Great Britain who refuse to be frightened by the prognostications of an approaching scarcity of iron ore.

#### A New Era in Electric Railroads.

With the successful development of the electric locomotive there opens what may prove to be a new era in electric railroad construction. The advent of this very important factor in long distance rapid transit has stimulated promoters to endeavor to interest the investing public in the building of lines of considerable length in which steam would be a negligible factor, excepting possibly in power plants, and which would operate in competition with existing steam railroads. Already serious efforts are being made toward the establishment of such lines connecting great centers of population, among them a line from New York to Philadelphia and another from New York to Boston. The time seems to have come when electric traction can be economically and successfully accomplished on a large scale. Several steam roads have demonstrated this, their experiments having been made

on a practical basis for the purpose. The great electric companies stand ready to furnish the necessary motive forces in the shape of electric locomotives and electric cars. Water power is available in many parts of the country to supplement steam plants, and the secret of long distance power transmission has been mastered to the point of a highly successful practical application.

It is quite certain that steam railroads are checked in the adoption of electricity as a motive power by their large investments in locomotives and other equipment, to discard which would mean a great sacrifice of money that would have to be added to the cost of electrification when considering the investment features of the change. There are also certain uses in which it is doubtful if electricity would satisfactorily replace steam, considering the two means of traction as they are developed to-day, and this is the opinion of conservative railroad men who have been won over to electricity. But it seems clear that an altogether new railroad, traversing a country of moderate grades and of normal climatic conditions, could be equipped with electric motive power to the advantage of the investors in the enterprise.

The latest electric railroad projects follow in details of construction the lines of steam railroads. Instead of depending upon local traffic, and operating to a greater or less extent within the locations of streets and highways, the promoter seeks the necessary legislative permission to take land by right of eminent domain and construct a railroad without grade crossings and with every protection necessary in order that high speeds may be obtained from one terminus to another. On such a system freight would bear the same important relation to passenger traffic that it does on steam lines.

If large electric railroad projects are successfully carried to completion they will have an important influence industrially because their requirements will be much greater than those of most electric systems hitherto constructed. Rolling stock must be heavy as that of steam roads and the development of the steel car, already well begun, will be carried still farther. The power plants must be huge if power is to be obtained from these sources. A thousand and one industries will be called upon to furnish each its share toward the equipment.

#### A Result of 20,000-Ton Battleships.

If the successful trials of the great British battleship Dreadnought and the revelation of the existence of a new class of British cruisers are to result in much larger, swifter and more heavily armed types of American battleship and cruiser, the effect industrially will be no unimportant one. To build and equip a 20,000-ton battleship, armed exclusively in its main battery with 12-in. guns, is a vastly different undertaking from that of any warship, built or building, of this country; and the difference is fully as great between a present day armored cruiser and one of 25 knots, armed with a main battery of eight 12-in. guns. Many industries are called upon to furnish the materials and equipment for a warship, and the management of a large proportion of them will have to give serious thought to the new problems which the sudden increase in the size and strength of everything must present to them.

Hitherto the modern warship has changed in size and general equipment in a steady though quite rapid evolution. The proposed jump means to accomplish at one stroke what it had previously taken a number of years to bring about. The shipyards themselves will feel this difference, and probably will have to go to considerable expense in preparing for the building of



the larger ships. If steam turbines are to be employed (the Dreadnought appears to have demonstrated the turbine to be efficient and practical for the purpose), the engine builders will be given the task of producing these monster machines. The structural work will present interesting and perhaps perplexing problems, for to increase battery power so greatly means a correspondingly vast increase in structural strength. Government works will have to prepare for a greater production of the heaviest type of gun, for where the existing battleship carries four the Dreadnought has 10; and the ships of the new cruiser class have eight 12-in. guns while our present cruisers have none, with, perhaps, an occasional exception. And the Navy Department promises to make the ship tentatively authorized by the last Congress even more powerful than the English leviathan. There must be a corresponding increase in the production of the heavier projectiles. Repair shops must be given better and larger facilities for handling their work.

The outside manufacturing establishments which contribute to the building and fitting of warships must be equipped for the new requirements. In *The Iron Age* of December 7, 1905, we discussed the effect of larger ships and heavier armament upon naval workshops. What was pertinent then, with the 16,000-ton battleship, more heavily armed than existing ships, named by the Navy Department as the maximum of efficiency and practical size, is even more pertinent to-day, with the 20,000-ton ship already accepted by many of the best naval authorities as the warship unit of the near future and with the prospect of even greater tonnage in a very few years. Not only Government gun factories, projectile factories and navy yards, but all private manufacturing establishments participating in this work, must be made to conform with the new conditions in the navies of the world.

## CORRESPONDENCE.

### The Gayley Dry Blast and German Engineers.

To the Editor: Two articles appeared in your issue of September 27 either of which might have been endured without protest by itself but taken in conjunction they do not deserve to pass unnoticed. I refer to the translation of the article of Prof. Bernard Osann and the letter of F. E. Junge.

For the past four or five years foreign engineers particularly and some American ones not conversant with the conditions have been exploiting the blast furnace as a source of power as though it was the invention of a savage tribe recently discovered in the heart of an unknown continent, and comparisons without number and without end have been made between the power actually developed at blast furnaces and the power that their gases were capable of yielding if used in gas engines. In almost every case the practice existing 20 years ago, involving two-flue or other inefficient boilers and slow speed, nonexpansive slide valve engines, has been adopted as the standard of comparison; and with this standard it has been proved time and again to the entire satisfaction of those adducing the proof that the gas engine could do the work with one-fifth the gas and without the equipment of boilers.

The facts of the case are that most furnaces have machinery economical enough to do the work without consuming any fuel in addition to the coke charged in the furnace; that many of them have no market for the power, and that any further saving would have no practical or financial value to them. But for the last 10 or 15 years every modern blast furnace plant built at a steel works has been provided with a first-class type of efficient boilers and with compound condensing engines of high efficiency, and has also been provided with a large steam main running from the furnace to the steel mill in order

to supply to the mills without cost all steam not needed at the blast furnace. With such boiler and engine equipment a steam engine will keep the gas engine exceedingly busy to save one-third of the fuel required by the former instead of four-fifths, which it is so easy to claim that it can save over the old type of installation.

The first person to suggest the employment of furnace gas directly in gas-driven blowing engines was Frank Firmstone of Easton, Pa., 30 years ago, and all American furnacemen with more than a rudimentary knowledge of the subject have known for many years that the gas engine under certain conditions was more economical than the steam engine. It has not been, as is so frequently assumed, the ignorance of American engineers, but commercial conditions and the technical incompleteness of the gas engine, especially for driving blowing engines, that have caused the delay in its introduction in this country.

It is perhaps typical of our national characteristics that an invention which alleviated an objectionable condition should not appeal to us as much as one which to a considerable extent removed the cause of the condition. Continental engineers have expended themselves in methods of utilizing their bountiful supply of highly combustible gases; Americans have turned with more enthusiasm to Mr. Gayley's invention, which promises to reduce the quantity and richness of these gases by a large saving of coke, but because our German friends find themselves unable to understand the reason for the great saving made by Mr. Gayley's dry blast process they have adopted the simple expedient of denying its existence.

Mr. Gayley finds in practice, with his invention, a saving of 20 per cent. of fuel. Mr. Meissner, after careful tests, has also found that the power required for refrigeration was less than the power saved in the blowing engine, for reasons which every intelligent furnaceman ought to be able to understand.

Prof. Osann in his learned article finds that this saving of 20 per cent. in fuel does not square with his inadequate and exploded theories of the blast furnace and says that 5 per cent. is the maximum possible saving. He then proceeds to erect on this foundation a structure of hypothesis, assumption and arithmetic, entirely without a stiffening of fact. The whole structure is based on a misunderstanding of the action of a blast furnace so gross as almost to seem intentional and certainly inexcusable. Mr. Junge similarly ends his monitory lectures on the backward state of our development by denying the results of actual tests in practice with the Gayley apparatus and by referring us to the hotch-potch of learned nonsense published by his fellow countryman.

It would be well if gentlemen like these in Germany and elsewhere would come to realize that there is more in metallurgy than multitudes of figures based on unfounded assumption, and would take heed to that old, old fact that when practice does not square with theory it is the business of theory to get out of the way as politely and silently as it can. In this particular case it is probably fair to say that American blast furnacemen to a great extent understand the reason for the saving made by the Gayley process and have a theory of the blast furnace which accounts satisfactorily for its actions. But they do not assume that it is their duty to cry aloud about the backwardness of their German cousins concerning the greatest improvement in the blast furnace in the last 20 years. They assume that in their own good time the Germans will come to an understanding of the matter which will bring theory and practice into satisfactory accord, just as they expect that in their own good time American engineers will take hold of the gas engine, redesign it, and put it into the condition in which American metallurgists will consider that it is safe for them to use and in which its introduction will enable them to pay a greater return on the capital invested than does their present practice. When that time comes gas engines will be common in America in those plants which have everything to gain by its use.

J. E. JOHNSON, JR.

GLEN WILTON, VA., October 19, 1906.

**Cast Iron vs. Steel Car Wheels.**

To the Editor: In *The Iron Age* of October 4 I observed an article which suggested to me the considerations which are given below, especially as I also observed in the issue of October 11 an article which proposes certain changes in the manufacture of cast iron car wheels. Evidently cast iron car wheels are not meeting present conditions. Else why are these changes suggested, as well as other propositions made which have been published in other papers relative to methods of casting car wheels? One writer desires to change the design of the wheel, another to change the composition of the cast iron, a third to change the taper, thicknesses, &c. What is all this for, if the cast wheel is so excellent that somebody desires to broaden its use even in Europe?

Now to my mind these changes are hardly necessary, because the time for the use of cast iron car wheels is past. It would be a considerable step backward to introduce the cast iron wheel in Europe. It is not in accordance with the modern development of the steel car, as I explained in a paper recently presented before the Iron and Steel Institute in London. It is regrettable to see the cheap cast iron car wheel still so extensively in use in the United States, where railroad traffic and the capacity of cars have been and are so rapidly increasing. This question should be thoroughly considered. In Europe the management of the railroads is personally responsible for the loss of life and property, but in our country it is as yet practically not so responsible. In considering their personal responsibility, it is wise for the officers of various railroads not to accept untrustworthy cast iron wheels.

With the increase of the use of freight cars of heavier capacity on American railroads the cast iron car wheel will have to disappear, following the historical rule that "improvement will not last without further improvement." Otherwise the heavy steel cars now being used will disappear, as there is no doubt that the cast iron wheel of to-day is not suitable to stand modern requirements. I have not above alluded to the use of cast iron car wheels on passenger cars, which is almost criminal. On such cars the steel tired wheel is mainly in use abroad, but it is also used considerably in this country, which is a further proof that the cast iron wheel is not regarded as trustworthy. If the managers of railroad companies will go further in this matter they will find that a uniform wheel for all kinds of heavy freight cars, as well as heavy passenger cars, will greatly simplify their methods and cheapen the general expense, if only the best available wheel of quality is used and not the wheel of quantity. There is to my mind only one reliable and cheap proposition at this time, and it is the American solid rolled steel car wheel. Such a wheel is not yet in use on the other side of the Atlantic, and we should be the leaders.

P. E.

Du Bois, Pa., October 14, 1906.

**The British Plate and Angle Agreement.**

The troubles of the combination of North of England and West of Scotland plate makers seem not to end. An effort was made to include angles in the agreement, which was originally confined to ship plates, and it seemed for a time that the prices of angles were under control. This was true so far as the Clyde and the Northeast Coast districts were concerned, but a Welsh firm and a single English firm who were outside of the agreement were able to undersell the associated manufacturers in Belfast. Shipbuilders there were thus able to secure an advantage which provoked serious complaint from Scotch shipbuilders. The latter claimed that they were called upon to pay as much as 15 shillings a ton more than was charged Belfast builders. This has been denied by the steel manufacturers, but they admit that the Belfast market has had a preference of from 2 shillings 6 pence to 5 shillings a ton. The merchant interests are considered responsible in part for the deviation from agreed prices. An effort is now being made to bring into the agreement the two firms that have been outside, and in

case this succeeds it is stated that a schedule of prices, not only for plates and angles but for other forms of structural material, will be agreed upon, so that buyers in the different consuming centers will be put on a parity.

**Joseph Wharton on the Iron Market.**

Joseph Wharton, president of the American Iron and Steel Association, has given for publication at Philadelphia his views concerning pig iron market conditions. He regards a further advance in prices as inevitable, coke and ores having advanced and both being scarce. Last year and for a part of this year, he says, producers who did not convert their pig iron into steel did not receive an adequate return for their iron. The much greater profits in steel making he considers to be a constant powerful inducement for the most important independent pig iron makers to erect steel mills or to consolidate their establishments with existing steel works. Since he is an important Eastern producer of pig iron and an owner of iron and coal mines, Mr. Wharton's views on the question of raw material supplies are of interest:

"The known but unworked deposits of iron ores in this country, though considerable, are not enormous, and are mostly in regions not at present so conveniently or cheaply accessible. Now that the United States Steel Corporation has acquired the Hill ore deposits of the Lake region, the pig iron makers outside of the great corporation have a comparatively small fund of Lake ores to draw upon; no more perhaps than enough to supply them when joined with such other ores as they can obtain for, say, 30 years. With this dwindling supply of ores, joined to the constantly increasing demand for iron, it seems impossible that the average price for pig iron should fall back to the figure of a year ago. Consumers of pig iron naturally perceive these things and will shape the prices of their products accordingly, although the improvements being made by the really great establishments may enable them to save enough in cost of manufacture to make up for the advanced cost of pig iron.

"The question of fuel necessarily enters into any forecast as to the cost of pig iron, and on this point it is clear that the supplies of coke from the Connellsville region cannot long be counted on to any great extent by the outside pig iron producers, who will therefore be obliged to draw more largely than hitherto upon the coke producers of other regions whose product is less satisfactory than the Connellsville coke, and this involves a higher cost of pig iron, even when that coke is bought at somewhat below the Connellsville prices. The bituminous coal territory is, however, so large and is so rapidly being made available in regions hitherto not reached by railroad (such as the best parts of the West Virginia territory) that no coke famine need be apprehended for many years, though the price of good coke may remain steadily as high as \$2.50 at ovens.

"The question of furnace capacity is not here considered, because it is obviously subordinated to the question of ore supply and may be assumed to be kept adequate to consume that supply. Finally, it may be reasonably expected that the average price of pig iron in the next five years, barring any such great disaster as would check the present prosperity with its demands of all sorts for iron and steel, is as likely to be above \$20 per ton at furnaces for 2X as to be below that figure. Of course, for the remainder of the year 1906 the price for that grade is apparently quite sure to be considerably above \$20 on cars at furnaces."

The Buffalo Foundrymen's Association, the Buffalo Branch of the National Metal Trades Association and the Buffalo Boiler Manufacturers' Association, gave an informal dinner on Tuesday evening, October 16, at the Ellicott Club, Buffalo. Seventy members and guests were present. A number of the members spoke interestingly on various phases of the work of these organizations.



## OBITUARY.

### ALFRED WAITES.

Alfred Waites, sales manager of the wire rope department of the Wright Wire Company, Worcester and Palmer, Mass., died at Worcester, October 16, aged 63 years. He had been sick but a week. He was a native of Gloucester, England, and was educated in his native city. As a young man he passed several years in India, and in the '60s came to America and entered the employ of Ethan Allen, pistol manufacturer, Worcester. After a short intermediate period of mercantile business Mr. Waites went to the Washburn & Moen Mfg. Company as stenographer for Charles F. Washburn, the vice-president and secretary of the corporation. He was the first stenographer in the city, and years of important service to Mr. Washburn and the company began with this work. He became Mr. Washburn's confidential secretary, this period including the barb wire litigation which Mr. Washburn handled for the company. Mr. Waites afterward was transferred to the sales department, being given charge of barb wire, wire rope and bale ties, and later was made sales manager of all of the company's specialties. His connection with the Washburn & Moen Company and its successor, the American Steel & Wire Company, continued from about 1880 to some three years ago, when he went to the Wright Wire Company to be the sales manager of its new rope department at Palmer, being associated with J. B. Stone, another Washburn & Moen veteran, who took the manufacturing end of the department. Mr. Waites continued in this office until his death. He was one of the best known men in the wire rope business in the country, and in fact in the whole field of wire specialties, and had not only a wide acquaintance but many warm friends in the trade. He was a man of strong literary tastes, had a high reputation as a Shakespearian scholar, and published several books. He was a member of the Worcester Club and Quinsigamond Boat Club, and was affiliated with an English lodge of Masons, though never with any Masonic body in this country. He leaves a widow and one daughter.

### JAMES H. DALLIBA.

James H. Dalliba, for more than 20 years prominent in the Lake Superior iron ore trade, died in New York October 8. From the late nineties until two years ago he was a member of the firm of Pickands, Mather & Co., Cleveland, but for two or three years before retiring from the firm he had been incapacitated by ill health, spending a portion of the time abroad under treatment. Reared at Marquette, Mich., Mr. Dalliba had been for all his active life identified in some capacity with the iron ore industry, his first connection being with the Cleveland Iron Mining Company. In the eighties he was a member of the ore and pig iron firm of Dalliba, Corrigan & Co., and on its dissolution became connected with Pickands, Mather & Co., having charge of the important interests of their ore department for a number of years. He was particularly active in increasing the use of Lake Superior ores in eastern Pennsylvania. For two years before his admission to the firm of Pickands, Mather & Co. Mr. Dalliba was assistant to the president of the Lackawanna Iron & Steel Company in New York.

ALEXANDER A. SHIMER, a director of the Donaldson Iron Company and the Lehigh Portland Cement Company, died at Allentown, Pa., October 6, aged 66 years. He had long been prominent in the manufacturing and commercial interests of the vicinity. From 1867 to 1890 he was a partner in a firm manufacturing cast iron pipe in Allentown.

HENRY MINTER, one of the founders of the firm of McCloud, Crane & Minter, Worcester, Mass., manufacturers of machine screws, died suddenly at Worcester, October 15, aged 75 years. For many years he was engaged in the manufacture of machine screws and later in the manufacture of a standard finished nut, doing business for himself. The firm of McCloud, Crane & Minter was formed in 1868, the partners being Charles C. McCloud, Henry G. Crane and Mr. Minter, all of whom are now

dead. The business was incorporated in 1889 as the McCloud, Crane & Minter Company, and shortly afterward Mr. Minter retired from the company to begin the manufacture of a finished nut. In 1890, after the death of Mr. Crane, the McCloud, Crane & Minter Company became the property of Albert H. Anthony and Edward M. Anthony, who now conduct the business.

ANGELO H. KNAPP, president of the Passaic Steel Company, Paterson, N. J., died October 12 from heart disease, aged 46 years. He was born in Orange County, N. Y., and began his business career as a messenger boy. Twelve years ago he went into the coal and lumber business and later joined the steel company.

SIR RICHARD TANGYE, head of the famous engineering firm of Tangyes, Limited, Birmingham, Eng., is dead. He was born in 1833. Sir Richard, with his brother, George Tangye, founded the Birmingham Art Gallery and Municipal School of Art. His hobby was the collection of manuscripts, books, and other relics of the period of Cromwell and the Commonwealth. He wrote several books, including "Reminiscences of Travel in Australia, America, and Egypt," "The Growth of a Great Industry," and "The Two Protectors."

DANIEL W. RICHARDS, for many years a prominent dealer in old material in New York City, died suddenly of heart disease October 5, at his home in Needham, Mass. He was born in New York City in 1840 and early engaged in the wholesale iron business. He became a member of the Seventh Regiment of New York and served with that organization during the Civil War. He retired from active business in 1894, since which time he has made his home in Massachusetts. Three sons and two daughters survive him.

GEORGE A. CROCKER, senior member of the firm of Crocker Brothers, pig iron and metal merchants, New York, died October 20, aged 75 years. He had been the head of the firm for nearly 50 years. He was born in New England, was graduated from Brown University and removed to New York when about 25 years old. He at first became connected with a firm of metal dealers, but soon engaged in business for himself, taking his brother into partnership. He was a director of the Bank of America, governor of the Metropolitan Club, a vestryman of St. Bartholomew's and a trustee of St. Luke's Hospital. He leaves a widow, two sons and a daughter. His sons are J. Reese Crocker and George A. Crocker, Jr.

BENJAMIN HOWARD WARREN, at one time vice-president of the Westinghouse Electric & Mfg. Company, and more recently president of the Allis-Chalmers Company, died suddenly at the Hotel Collingwood, New York, October 19, from cerebral apoplexy, aged 57 years. He was a retired engineer officer of the United States Navy, and was a member of the Engineers', University and Lawyers' clubs of New York, of the American Society of Mechanical Engineers and other organizations. Within the past year he had engaged in business as consulting engineer at 60 Wall street, New York, in partnership with A. M. Mattice, a lifelong associate in the navy and in business. Mr. Warren leaves a widow, two daughters and a son.

BERNARD MCGUCKIN, formerly superintendent of the Sharon furnaces of the Carnegie Steel Company, died last week, aged 41 years.

LEWIS H. DAVIES, secretary and treasurer of the Lewis Forge & Machine Company, Pittsburgh, died October 21 as a result of injuries received in a street car accident. He was 30 years of age.

THOMAS W. McCUNE, a well-known blast furnace builder of the Pittsburgh District, died last week at his home in Wilkesburg. He was born at Elizabeth, Pa., and had resided in Allegheny County all his life.

The Dunbar Furnace Company, operating a blast furnace at Dunbar, Pa., with affiliated interests consisting of the Semet-Solvay Company, Dunbar Sand Mfg. Company, the Dunbar Electric Company and the Dunbar & New Haven Railroad Company, has notified all employees of a voluntary advance in wages of 10 cents per day, effective November 1.

### The Virginia Iron, Coal & Coke Company.

The income account in the annual report of this company for the fiscal year ended June 30, 1906, compares as follows:

Earnings from—	1906.	1905.	Increase.
Furnaces .....	\$3,340,923	\$1,899,024	\$1,441,899
Foundries .....	79,486	59,429	20,057
Coal mines.....	944,140	731,842	212,298
Coke ovens.....	649,412	467,284	182,128
Saw mills.....	11,611	1,537	10,074
Crescent Works.....	62,721	158,446	*95,725
Totals.....	\$5,088,293	\$3,317,562	\$1,770,731
Expenses—			
Furnaces .....	\$3,053,523	\$1,620,256	\$1,433,257
Foundries .....	67,707	46,222	21,485
Coal mines.....	758,161	605,993	152,168
Coke ovens.....	579,544	437,339	142,105
Saw mills.....	7,170	1,496	5,674
Crescent Works.....	63,430	144,214	*80,784
Totals.....	\$4,529,535	\$2,855,520	\$1,674,015
Net earnings.....	\$558,758	\$462,042	\$96,716
Other income.....	22,078	54,471	*32,393
Total income.....	\$580,836	\$516,513	\$64,323
Interest, taxes, &c.....	420,392	426,833	*6,441
Surplus.....	\$160,444	\$89,680	\$70,764

\* Decrease.

Operating expenses were charged during the year with \$258,432 for depreciation and repairs, against \$214,281 in the previous year; also \$531,720 was spent for improvements on owned and leased properties, as compared with \$32,439 in the previous year.

The balance sheet as of June 30, 1906, compares as follows:

Assets.	1906.	1905.	1904.
Real estate and plant.....	\$13,337,057	\$14,098,904	\$14,322,246
Equipment .....	209,864	134,132	118,952
Securities owned.....	200,330	1,232,974	1,230,324
Ledger balance.....	603,358	554,212	248,535
Open accounts.....	71,988	22,873	35,533
Bills receivable.....	1,575,099	34,630	222,692
Advances to cashier, &c.....	5,526	7,148	6,225
Cash and sinking fund....	158,567	208,328	14,457
Virginia & S. W. general account .....	42,251	.....	.....
Material on hand.....	838,228	649,104	1,112,798
P. and L. deficit.....	.....	5,767	85,225
Totals.....	\$17,042,270	\$17,937,740	\$17,389,325
Liabilities.			
Capital stock.....	\$10,000,000	\$10,000,000	\$10,000,000
Bonds .....	6,409,000	6,691,000	6,991,000
Unpaid vouch. and payrolls	349,954	257,148	154,290
Bills and accounts payable.	19,330	12,779	68,285
Interest and taxes accrued.	122,478	132,812	133,317
Repair fund, &c.....	.....	.....	46,485
Virginia & S. W. current account .....	.....	.....	4,953
P. and L. surplus.....	141,507	.....	.....
Totals.....	\$17,042,270	\$17,937,740	\$17,389,325

President Henry K. McHarg states that dear labor and material cut profits. So far as the operation of the company's furnaces and ore mines is concerned the past year in the main was unsatisfactory. Although the prices of iron have been \$1 to \$2 a ton higher, practically all the advance was absorbed by the increase in wages and cost of materials. Labor has been especially scarce.

The company made 237,113 tons of iron in the last year. The coal mined during the year amounted to 1,264,564 tons and the coke produced to 400,591 tons.

Mr. McHarg announces the official terms of the sale of the stock of the Virginia & Southwestern Railway Company, belonging to the Virginia Iron, Coal & Coke Company, amounting to 10,045 shares. This stock is sold to the Southern Railway for \$200 per share. An installment of 25 per cent. cash was paid on July 15, and 12½ per cent. of the remaining 75 per cent. of the purchase price is to be paid each January and July with interest at 5 per cent. on the amount due semiannually until the whole amount is paid. The Southern Railway Company reserves the right to anticipate the payments of the whole amount at any time. As a result of this sale the balance sheet shows a decrease as compared with the previous year of \$761,846 in real estate and plant, and

of \$1,032,644 in securities owned and an increase of \$1,429,433 in bills receivable among the assets. Among the liabilities is a decrease of \$266,000 in the amount of first mortgage bonds outstanding.

### The Inland Steel Company's Improvements.—

CHICAGO, October 23, 1906.—(By Telegraph.)—For the erection of one blast furnace at Indiana Harbor contracts have been let by the Inland Steel Company, Chicago. The blowing engines will be furnished by the Allis-Chalmers Company, Milwaukee, Wis., and the stacks and stoves will be built by the W. B. Pollack Company, Youngstown, Ohio. Hoover & Mason, Chicago, will build the entire ore handling equipment, including the unloaders, bridges and pockets. The furnace will have a capacity of 490 tons daily and will operate on basic iron for the company's open hearth steel plant. Plans provide for the erection of a second stack, the construction of which has been deferred. Two additional 50-ton open hearth furnaces will be added and will be ready for operation about the middle of next year. The company now has under construction a sixth open hearth furnace, and the ultimate steel producing capacity will be 500 tons daily. A bar mill for rolling smaller sizes such as cannot be taken care of on the 24-in. mill will also be installed and will roll down to ¾-in rounds. With the completion of the blast furnace the steel plant will operate on direct metal.

The executive board of the Franklin Union, which will be founded at Boston with the accumulations of a fund left for the purpose in the will of Benjamin Franklin, has accepted plans for the building which will be located at Berkeley and Appleton streets. The structure will be 100 x 160 ft., four stories and well-lighted basement, and of a style of architecture contemporaneous with the time of the founder. There will be an auditorium, primarily for lectures, with a seating capacity of 1,000 people; a library which will be conducted as a technical branch of the Boston Public Library; classrooms, drafting room and chemical and physical laboratories on the upper floors, and steam and electrical laboratories in the basement.

Following the order for eight steamers placed by the Lackawanna Steamship Company with the American Shipbuilding Company recently the latter company has booked two orders, one placed by W. H. Becker, Cleveland, and the other by S. B. Cranage, Bay City, Mich. The former will be 440 ft. over all and will carry 7500 tons of ore. The second steamer will be of 9000 tons carrying capacity and will be 524 ft. over all. The American Shipbuilding Company now has under contract 43 steel steamers. One is a car ferry and another is a passenger boat. The company has closed contracts for 34 steamers since the beginning of this year.

Charles Peters, Col. H. A. Marting, W. A. Murdock, C. B. Fowler and others of Ironton, Ohio, are planning to erect another blast furnace in that city to be about the same size and capacity as Belfont Furnace and to be located in the south side of the city, the site not having been selected as yet. Those interested in the venture are working on the details and it is expected that definite plans will be announced in the near future.

The Pennsylvania Railroad Company's locomotive testing plant, which was operated at the Louisiana Purchase Exposition, has been moved to its shops at Altoona, Pa. On August 8 the first locomotive trial was made. The plant now occupies a 47 x 154 ft. stone building, and a number of improvements have been made upon it.

The Youngstown Sheet & Tube Company has decided to run its foundry at East Youngstown, Ohio, nonunion hereafter. The company will enlarge its foundry in the near future and will employ a larger number of molders, and while it will pay union wages, will not recognize any labor organizations.



## NEWS OF THE WORKS.

## Iron and Steel.

The Montreal Rolling Mills Company, Montreal, Canada, has erected a four-story building, covering an area of 60 x 260 ft., for the nut and bolt works, together with a forging shop, 67 x 210 ft., and a steel crane runway, 468 ft. long, for bringing in the necessary material. The machinery is all electrically driven. This plant is to take the place of the plant now being used on Mill street and will give the company fully 50 per cent. increased capacity.

The Maryland Rail Company, Cumberland, Md., is equipping another mill for the manufacture of light steel rails and also for the manufacture of twisted square steel bars for reinforced concrete work. The new plant is expected to be ready for operation by January 1.

It is thought that the Boonton Iron & Steel Company, Boonton, N. J., will not have to purchase much new machinery for its plant, which was recently damaged by fire, as very little of the machinery was damaged beyond repair.

In a letter to the stockholders of the Montreal Steel Works, Montreal, Canada, C. H. Godfrey, secretary, states that during the next year it is the intention to spend \$250,000 on land, buildings and plant to take care of the rapidly increasing business. The department for the production of manganese steel castings is to be enlarged and the capacities of the machine shop and assembling department are to be materially increased. To furnish the money for these improvements it is proposed to sell \$125,000 of new preferred stock and \$125,000 of new common stock, which represent half of the increase in the capital stock of \$500,000.

The second basic open hearth furnace at the plant of the Colonial Steel Company at Colona, Pa., has been completed and will start on October 17. This is a 35-ton furnace and will make about 2000 tons of steel billets a month, which will be sold in the open market. No. 1 open hearth furnace at this plant has been in operation steadily since August 8, without any interruption from the day the furnace was first lighted.

Construction work on the first two buildings of the Ontario Iron & Steel Company's plant at Welland, Ont., is well under way—a rolling mill, 67 x 300 ft., and an open hearth building, 80 x 180 ft., respectively. The company's product will be steel billets and merchant bars and the plant will have a capacity of 75 tons at the outset. W. H. Near of the Page-Hersey Company, Guelph, Ont., is president, and Robert Porter, formerly with the National Tube Company, Wheeling, W. Va., is manager and has charge of the construction work at the new plant.

The Ludlum Steel & Spring Company, Pompton, N. J., which recently purchased property at Colonie, on the outskirts of Watervliet, N. Y., is erecting two buildings, 75 x 300 ft., which it intends to operate in the course of six or eight months.

The Empire Iron & Steel Company has started the long expected improvements at its plant at Niles, Ohio. The output will be greatly increased and many more men employed.

The Janson Steel & Iron Company, Columbia, Pa., manufacturer of bar iron and steel, has placed its new mill in successful operation and as soon as the present force is well organized the mill will be placed on double turn. The company starts with orders far exceeding its expectations.

## General Machinery.

The interests of the Federal Machinery Company, Allegheny, Pa., and the Republic Engineering Company, Pittsburgh, have been merged and will hereafter be known as the Republic Engineering & Mfg. Company, with a branch office at 1606 Machesney Building, Pittsburgh, and general offices at the plant on Boquet street, Allegheny. The new company has been capitalized at \$75,000 and its Executive Board consists of James E. McNary, president; Wm. T. Lyon, vice-president and treasurer, and S. G. Lyon, secretary. The contract for a new two-story brick building, 60 x 100 ft., to be built adjacent to the present plant in Allegheny, has been let and work has been commenced on its construction. When completed it will contain a brass foundry, pattern shop, coupling and coal washing machinery departments and offices, and will enable the company to double its present capacity. The company will manufacture special mill machinery, and also machinery for tube and tin mills, spacing machinery for structural work, power transmission, elevator and conveying machinery, keyless shaft couplings, coal washeries, and will do general casting and machine work. The new building will be completed about December 1.

H. C. Foltz, successor to the Hagerstown Steam Engine & Machine Company, Hagerstown, Md., is in the market for a pair of 16-ft. bending rolls to bend No. 12 gauge galvanized iron.

C. E. Francis & Bros., manufacturers of woodworking machinery, Cincinnati, Ohio, have agreed to locate a plant at Rushville, Ind., for a cash bonus and a factory site offered them.

The Mountain City Foundry & Machine Works, Greenville, S. C., recently bought out the Greenville Machine Works, the property of R. M. Macdonald. The company is desirous of receiving catalogues.

The Marion Steam Shovel Company, Marion, Ohio, builder of steam shovels, dredges and ballast unloaders, has recently received contracts for building 29 steam shovels for service on the Mesaba ore range. The order includes 23 model 91 and 6 model 60, to be delivered in January, February, March and April next. This company has been extremely successful in meeting the ore field requirements for steam shovels and in the last few years has built a large number, one order of 1905 being for 20 machines. It has shipped from 35 to 45 per month and intends to increase its output materially, having recently enlarged its capital stock from \$500,000 to \$1,000,000.

The Robertson Machinery Company, Welland, Ont., manufacturer of hoisting engines and conveying machinery, is planning an extension to its plant. The company intends to build early next year two buildings, one 60 x 150 ft. and the other 40 x 150 ft., comprising foundry, blacksmith shop, machine shop and warehouse.

The Ideal Concrete Machinery Company has been incorporated at London, Ont., with a capital of \$75,000, to manufacture concrete machinery, &c. The provisional directors include F. A. Borst, South Bend, Ind., and J. M. McEvoy and F. M. Leach, London, Ont.

Riddell Bros., engineers and machinists, Atlanta, Ga., purchased the most important machines and tools used by H. P. Ashley of that city in his machine shop, on his retirement from the business a few weeks ago. They recently installed a new Le Blond lathe, a Barnes drill press and a Pond punch.

The Scott Machine Company has been incorporated at London, Ont., with a capital of \$40,000, to manufacture machinery, tools, boilers, engines, automobiles, &c. The directors are G. E. Scott, W. C. Scott and W. H. Braddon, London, Ont.

The Ross Gear & Tool Company has been incorporated at Lafayette, Ind., with \$50,000 capital stock, to manufacture gearing, parts for motors, &c. The directors are William Ross, David Linn Ross and David Edward Ross.

The Ft. Wayne & Wabash Valley Traction Company will build new shops near the power station at Ft. Wayne. M. J. Kehoe, Ft. Wayne, Ind., is chief engineer.

The orders which the Fox Machine Company, Grand Rapids, Mich., has been receiving for some time, especially for its Fox light milling machines, have been so far in excess of its capacity that the company has started a night crew, operating its plant 24 hr. per day. Even at this rate the company states that it is not catching up with its orders, so rapidly does the sale of its machines increase.

The new shop to be erected by the W. P. Lucas Company, Oil City, Pa., is to be used as a garage, to be equipped with machinery to repair and rebuild automobiles.

The Hamilton Mfg. Company, Hamilton, Ohio, recently incorporated with a capital stock of \$10,000 to manufacture metal and wood specialties, is in the market for machinery for light manufacturing, to equip the new plant it is to erect.

J. C. Steele & Sons, manufacturers of the New South brick machinery, Statesville, N. C., have installed a new boring mill and radial drill and are about putting in a new and enlarged cupola. They have just furnished a brick making equipment of 40,000 bricks per day capacity to the Poe Brick Company, Fayetteville, N. C., an exact duplicate of what the same house took last year. They have supplied similar equipment to the Piedmont Brick Company, Lowell, N. C.; Oglethorpe Brick Company, Oglethorpe, Ala., and several others.

## Power Plant Equipment.

The Water Department of Decatur, Ill., will receive bids until October 29 for a 6,000,000-gal. compound condensing vertical or horizontal pumping engine.

The Water Commissioners of Brockton, Mass., will receive bids until November 21 for one vertical triple expansion condensing crank and flywheel pumping engine of 6,000,000 gal. daily capacity.

At a special election to be held November 15 the residents of Atlantic, Iowa, will vote upon the proposition to sell the municipal lighting and power plant, which is said to have been operated at a loss for the last five years.

The City Council of Bedford, Ind., has ordered improvements to the water plant that will call for new machinery.

The Town Board of Milford, Ind., has ordered plans for the construction of an electric light plant.

The Culver City Water Company has been incorporated at Culver City, Ind., with \$9000 capital stock, to construct and operate a water works plant. The directors are Dr. Oliver A. Rea, Thos. E. Slattey, Henry M. Speyer, John Osborne and J. Henry Koontz.

## Foundries.

The Latta & Martin Pump Company, Hickory, N. C., is contemplating the erection of a foundry and cylinder making plant.

The William Cramp & Sons' Ship & Engine Building Company, Philadelphia, Pa., has awarded contract to the American Bridge Company for two additions to its foundry, 42 x 73 ft. and 73 x 96 ft., respectively. The additions will be of structural steel, with brick walls.

The Monarch Iron Works have been incorporated at Ply-

mouth, Ind., with \$50,000 capital stock. The directors are Alexander T. Steward, Eugene A. Tascher, Chas. A. Johnson, James B. Beattie, Peter J. Dolan, N. S. Aspinwall and T. A. Borton.

A. G. Spaulding & Bros. Mfg. Company, Chicopee, Mass., maker of gymnasium apparatus and athletic goods, has purchased the Ames Foundry in that place and will conduct it as a part of its plant. The company states that it expects to run the foundry on the same lines as its previous management, only on a larger scale, if possible. Plans for the future of the department are not matured, and all that the Spaulding Company is now doing is to try to take care of its own foundry work.

The H. W. Caldwell & Son Company, Chicago, whose foundry was recently damaged by fire, has made arrangements for taking care of its immediate needs in castings, and expects to resume molding on its own floor within two weeks. The walls of the building were mainly left intact and most of the equipment was but little injured.

#### Bridges and Buildings.

The Bartlett Steel Company, Joplin, Mo., will erect a new bridge shop having a capacity of 12,000 tons. Most of the immediate requirements for the shop have been satisfied, including the Cleveland Punch & Shear Company's shears, punches and bending rolls, Allen riverers, Laidlaw-Dunn-Gordon Company's air compressor, and traveling cranes from Pawling & Harnischfeger, Milwaukee. A considerable number of small tools have also been ordered.

#### Fires.

The plant of the American Axe & Tool Company, East Douglas, Mass., suffered a loss of \$40,000 by fire October 17. It is understood that the burned buildings will be replaced, though no official decision has been made.

The plant of the Grand Rapids Malleable Iron Company, Grand Rapids, Mich., was destroyed by fire last week, the loss being about \$100,000.

The power house of the Detroit United Railway Company, Detroit, Mich., was burned October 22, the loss being estimated at \$60,000.

The new plant of the Utah Packing Company at Denver, Colo., was destroyed by fire October 22. The loss is placed at \$200,000.

The plant of the Jersey Cereal Company, near Irwin, Pa., was burned October 19. The loss is placed at \$50,000.

The shipyards of Brown & Sons, at Tottenville, S. I., were destroyed by fire October 23. The loss is about \$50,000.

#### Hardware.

The Southern Saw Works, Atlanta, Ga., has put in a new tempering furnace, grinder, and drilling machinery, considerably increasing its capacity. It has also opened an office and salesroom in the center of the city, at 59 South Forsyth street. Shipments of saws have recently been made to Cuba and Mexico.

The A. A. Wood & Sons Company, Atlanta, Ga., intend in the near future to place on the market several wagon makers' tools of new design.

The Conneaut Shovel Company, Conneaut, Ohio, which before its recent organization was known as the Ronberg Company, is rebuilding the plant and practically doubling its capacity. The latest shovel machinery is to be installed, including new forming, drilling and smoothing presses, punches, &c. The new company has secured about three acres of land adjacent to the New York, Chicago & St. Louis railroad. In addition to the Ronberg ore shovel which has heretofore been made, the company will put on the market the Magyar Union coal shovel.

The Worcester Metal Goods Company, Worcester, Mass., has purchased the plant and business of the Grilley Company, New Haven, Conn., manufacturer of metal specialties, and will move the business to 17 Hermon street, Worcester, where 5000 sq. ft. of manufacturing space has been taken. The new company is capitalized for \$30,000, and its officers are: President, Arthur Flagg; treasurer, Walter D. Grout, and secretary, J. Walter Flagg, the officers constituting the board of directors. Mr. Grout, recently with the Spencer Wire Company, Worcester, will manage the business. The Grilley Company was established in 1866, and makes a specialty of hose supporters, buckles and other sheet metal novelties, to which the new owners of the business will add a line of wire specialties. The sale includes a considerable amount of special machinery, to which will be added a number of new automatics, which have already been ordered.

The Pierce Cycle Company, Buffalo, N. Y., has lately been organized with the following officers: Percy P. Pierce, president; Charles Clifton, vice-president; Wm. B. Colburn, secretary and treasurer. The board of directors comprises the officers and Geo. N. Pierce and Moses Shire. For the present the company will limit its operations to the manufacture of bicycles, but later it expects to enter the motorcycle field. While the company is entirely separate and distinct from the George N. Pierce Company the stock is controlled by virtually the same people. The company will occupy the former premises of the George N. Pierce Company, which will shortly take possession of its new automobile plant.

#### Miscellaneous.

The Friedley-Voshardt Company, Chicago, manufacturer of architectural ornaments, statuary, steel ceilings and kindred lines, is erecting two additions, one being 25 x 48 ft., four stories, for offices, and the other 48 x 75 ft., four stories, for factory purposes.

The Northwestern Metal Mfg. Company, Minneapolis, Minn., has been incorporated with a capital stock of \$10,000. Geo. H. Cook is president; Wm. C. Schroder, vice-president and general manager, and Richard E. Cook, secretary and treasurer. A general line of mixed metals is being manufactured.

The Louis De Jonge Company, Fitchburg, Mass., paper manufacturer, is to erect an addition to its works, 150 x 350 ft., and two stories, and a new power house.

The Dupaul, Young Optical Company, Southbridge, Mass., manufacturer of optical goods, is building a new factory, 40 x 120 ft., and a boiler and engine house. The company states that the equipment is in charge of A. C. Moore, Southbridge, the architect of the building.

S. L. Allen & Co., Philadelphia, Pa., manufacturers of agricultural implements, have let contract for an addition to their machine shop, 45 x 79 ft., to give more bench room and to allow space to operate the machinery to better advantage. The only new machine the firm has decided to install is a Gould & Eberhardt 16-in. shaper.

The new plant which the Star Corundum Wheel Company, Detroit, Mich., is to build will be 170 x 175 ft., located on the Wabash Railroad. Contracts for the building have been let and it is expected that it will be ready for operation by January 1.

Another large addition is to be built at once to the plant of the Garland Nut & Rivet Company at West Pittsburgh, Pa. The addition will adjoin the new wareroom and will run the entire length of the plant. It will be used for the manufacture of large bolts and rivets and will be equipped with the most modern machinery. J. A. Elsesser will have charge of the construction of the new building.

The Duer-Elderkin Spring & Mfg. Company, which now has a plant at Twenty-sixth street and Liberty avenue, Pittsburgh, is looking for a larger site and will probably locate in that city. The present plant of the company has become too small to take care of its rapidly growing business.

The Poindexter Mfg. Company has been incorporated at Indianapolis, Ind., with \$25,000 capital stock. It will manufacture Poindexter and Hicks tools, implements, &c. The directors are R. E. Poindexter, Edgar J. Hicks and Robt. F. Davidson.

The Indiana Brass & Bronze Company has been incorporated at Indianapolis, Ind., with \$20,000 capital stock. It will manufacture and finish brass, bronze and other metal articles. The directors are George R. Stewart, John F. Goodnow and Henry Newbrough.

The Oxygenator Company has been incorporated at Buffalo, N. Y., to manufacture oxygenators and chemical apparatus and instruments. The company is capitalized at \$20,000. The directors are C. N. McMichael, A. L. Higley and E. L. Moses, Buffalo.

The Knecht & Thomas Pump Company has been incorporated at Winchester, Ind., with \$7500 capital stock, to manufacture iron and wooden pumps. The directors are John W., Thomas and William W. Knecht and Louis C. Hinsmann.

The Washington Motor Car Company has been incorporated at Washington, Ind., with \$150,000 capital stock, to manufacture and sell motor cars. The directors are Frank W. and John R. Fowler and Edward W. Strack.

The Mann Steel Car & Advertising Company, East Pittsburgh, Pa., recently incorporated, has completed temporary buildings in which it will install machinery for the manufacture of its machine, to be distributed in the different car lines in the spring. P. J. Mann is president; C. A. Hill, vice-president; John E. Jones, treasurer, and A. W. Hargett, secretary.

The American Sintering Company, Hubbard, Ohio, is building additions to the plant that will double the capacity and give an output of 150 tons daily. The company reduces the flue dust taken from the numerous blast furnaces in the vicinity.

The United States Transportation Company, Greenwich, Conn., has been incorporated in Connecticut with authorized capital stock of \$750,000, to construct, acquire and maintain shipyards, dry docks, engine works, boiler works and foundries, and to construct and operate steamers and other vessels, as well as to do a general manufacturing and mercantile business. The first meeting of the company was held at Greenwich, October 10, in the company's office in the Trust Company Building, and the following officers were elected: President, Stevenson Taylor; vice-president, John Hall McKay; secretary and treasurer, George Q. Palmer; directors, these officers and Nicholas F. Palmer, George E. Weed and Carroll S. Smith. Some of these gentlemen are connected with the Quintard Iron Works now situated at 742 East Twelfth street, New York. The full scope of the company has not yet been determined, nor has the property for its purposes been acquired, nor will the company be ready to commence business for several months.



The Ralston Steel Car Company, Columbus, Ohio, has had plans prepared for a car factory building, 132 x 300 ft. Orders have been placed for all the necessary equipment, such as punches, shears, new power plant, which consists of a steam unit of sufficient size to drive a 300-kw. generator, new boilers, two electric cranes. The building will be one story in height, of brick, steel and corrugated iron construction.

The New York, New Haven & Hartford system of electric railroads will be increased next spring by the building of a cable line to the summit of Mt. Greylock, the highest peak of the Berkshire Hills, in western Massachusetts. The line will be similar to that in operation on Mt. Tom, near Holyoke, Mass.

Last week the business men of Punxsutawney and Claysville, Pa., organized a Chamber of Commerce with S. A. Rimm, president; E. C. Gible, secretary, and J. A. Weber, treasurer. This new organization has accepted a proposition from a company making gas engines to locate at Punxsutawney. The company will furnish bonds to erect buildings which with equipment are to cost \$100,000. The Chamber of Commerce agreed to give a free site and a bonus to secure the plant, the name of the owner not being given out.

The Crane & Whitman Company, Bayonne, N. J., has purchased the equipment and business of the Whitman Mfg. Company, of Garwood, N. J., which it will move to its present shop in the former city, where a two-story brick building is being erected for the manufacture of B & C friction clutches. The company expects to take up the manufacture of gasoline launch engines and automobiles. All machinery has been purchased. Henry M. Crane is president; Allen E. Whitman, vice-president and treasurer, and Peter M. Erikson, secretary.

### PERSONAL.

James A. Burden, Jr., has been elected president of the Burden Iron Company, Troy, N. Y., succeeding his father, the late James A. Burden. William P. Burden succeeds James A. Burden, Jr., as vice-president.

G. L. L. Davis, who has been New York sales agent of the Scullin-Gallagher Iron & Steel Company, St. Louis, Mo., has been appointed general sales agent of the General Castings Company, whose steel foundry is at Verona, Pa., near Pittsburgh. His offices are at 42 Broadway, New York.

E. M. Tutwiler, president of the Tutwiler Coal, Coke & Iron Company, which formerly operated the Vanderbilt Furnace at Birmingham, Ala., has returned from a European trip.

Judson Draper, heretofore connected with the Bessmer department of the Republic Iron & Steel Company at Youngstown, has been appointed assistant superintendent of the Inland Steel Company, Indiana Harbor, Ind.

E. Smalley, S. Smalley, L. Tweedale and J. E. Tweedale, of the firm of Tweedale & Smalley, textile machinery manufacturers at Castleton, near Manchester, England, are making a tour of the United States, visiting the various machinery centers. They will return to England about the middle of November.

James D. Rhodes, Pittsburgh, was reelected president and Wm. F. Bonnell, of Otis, Bonnell & Co., Cleveland, Ohio, was reelected vice-president at the recent annual meeting of the National Car Wheel Company at Rochester, N. Y. Charles A. Maher, Cleveland, who has been secretary of the company since its organization in 1903, was made a vice-president and Geo. D. Rhodes, Pittsburgh, was elected secretary and treasurer.

L. K. Hirsch, president of the L. K. Hirsch Company, 100 Broadway, New York, has just returned from Europe after an absence of six months.

Paul E. Noe has been appointed to succeed J. W. Copeland, resigned, as Chicago manager of the Braeburn Steel Company. Mr. Noe has been engaged for the past 16 years in the sale of special steels.

C. W. Bray, president, and other officials of the American Sheet & Tin Plate Company, inspected its sheet and tin plate plants in the Wheeling District last week. Mr. Bray made the trip from Pittsburgh to Wheeling in his automobile, being an enthusiastic motorist.

The directors of the Crucible Steel Company of America met October 22 and re-elected the retiring officers. Charles W. Rowlands was appointed assistant secretary. Heretofore J. A. Sutton had filled the position of assistant

secretary in addition to that of third vice-president. Mr. Sutton continues in the latter office.

Dr. Andrew Fleming West, dean of the Graduate School of Princeton University and since 1883 professor of Latin, has been selected to succeed Dr. Pritchett as president of the Massachusetts Institute of Technology. Dr. West is 53 years of age, a native of Allegheny, Pa., and a graduate of Princeton in the class of 1874. He holds the degrees of doctor of literature from Oxford University, doctor of philosophy from Princeton and doctor of laws from Lafayette.

At the last meeting of the directors of the Weir Frog Company, Cincinnati, G. K. Hooper, consulting engineer, of New York, was elected vice-president of the company. Mr. Hooper has also been elected a director of the American Tracing Cloth Company.

### The National Metal Trades Association.

The Administrative Council of this association held its fall meeting in Cincinnati October 16 and 17. The establishment of branches was authorized at Atlanta, Ga.; New Haven and Hartford, Conn.; Springfield, Mass., and Pittsburgh, Pa. A delegation consisting of Wm. Kroeschell, J. D. Hibbard and F. K. Copeland, all Chicago members of the association, was appointed to attend the meeting of the Citizens' Industrial Association at Chicago early in December. A vote of thanks was tendered to the acting commissioner and secretary, Robert Wuest, in appreciation of his services in behalf of the association, especially during the absence of Commissioner Eagan, who has been for some time in Mexico on account of ill health. J. V. Wright, who has been acting as assistant to Mr. Wuest, was appointed assistant commissioner. It was decided to hold the next annual convention at Boston, Mass., March 21 and 22, 1907.

Much gratification was expressed at the excellent condition in which the association finds itself at present, as well as over the considerable increase in membership since the last meeting of the council in the early spring. A committee was appointed to determine the question of territory to be assigned to the different branch locals, of which there are now 16. The following members were present: H. N. Covell, Lidgerwood Mfg. Company, Brooklyn, N. Y.; J. W. Gardner, Gardner Governor Company, Quincy, Ill.; W. D. Sayle, Cleveland Punch & Shear Works, Cleveland, Ohio; M. H. Barker, American Tool & Machine Company, Boston, Mass.; F. K. Copeland, Sullivan Machinery Company, Chicago; William Lodge, Lodge & Shipley Machine Tool Company, Cincinnati; O. B. Kinnard, Kinnard-Haines Company, Minneapolis, Minn.; C. E. Hildreth, Whitcomb-Balsdell Machine Tool Company, Worcester, Mass.; C. Bermingham, Canadian Locomotive Company, Limited, Kingston, Ont.; G. K. Garvin, Garvin Machine Company, New York; W. M. Taylor, Chandler & Taylor Company, Indianapolis; Howard B. Eells, Bucyrus Company, South Milwaukee, Wis.; John Kirby, Jr., Dayton Mfg. Company, Dayton, Ohio, and Robert Wuest.

The strike of the Star Brass Mfg. Company in the Boston District has been settled by the men returning to work on the nine-hour basis instead of the ten-hour. Whether or not any agreement was signed has not been disclosed.

The National Pipe Bending Company, New Haven, Conn., has shipped to the Cos Cob electric power station of the New York, New Haven & Hartford Railroad an 8000-hp. National feed water heater, which is the largest ever made by the company and one of the largest ever constructed in this country. It weighs 13 tons and has 42 coils of 1½-in. outside diameter copper tubes, which are expanded into a header at each end of the heater. Feed water is passed into one header through the coils and out through the other header to the boiler, the water being heated at 200 deg. and over. The heater is 84½ in. in diameter and 11 ft. 2 in. in height.

The Stephens-Adamson Mfg. Company, Aurora, Ill., announces the opening of a New York office on the tenth floor of the Wall Street Exchange Building. Frank H. McWethy has been placed in charge of the office.

## The Iron and Metal Trades

There is urgency for spot Pig Iron all over the country, but it is probably most acute in New England, where melters have been forced into the market to secure metal at close to \$25 per ton, in spite of the fact that they have unfilled contracts with furnace interests at very much lower prices. There has been an advance all along the line and in all sections of the country.

Exactly what tonnage of foreign Iron has been contracted for is very difficult to estimate. One cargo of close to 5000 tons of Middlesbrough Iron has just arrived, and is nearly all sold. Another interest has three cargoes afloat, while the fact that what available freight room there was for some time to come on the regular liners from Glasgow and Middlesbrough has been taken indicates that considerable quantities are to come forward. This foreign Pig Iron is selling at about \$1 per ton below the prices at which domestic Iron is selling for prompt delivery, but the foreign markets seem to keep pace with our advance, so that the spread between foreign and domestic prices is not nearly as large as it was during the last import movement.

Steel is scarce all over the country, and some Eastern Billets have actually been sold in the Pittsburgh District for \$32, delivered.

There have been some further large sales of Steel Rails, including 85,000 tons additional for the New York Central, thus nearly doubling the former purchase for 1907. The Texas & Pacific has contracted for 30,000 tons and the Northern Pacific for 10,000 tons additional. An order has been taken for 10,000 tons to go to Manila, and there is pending a lot of 30,000 tons for the Guayaquil & Quito road. The Canadian Pacific is in the market for a large tonnage, while it is expected that the Delaware & Hudson and the New Haven roads will place their orders at an early date.

Lake shipbuilders have ordered 30,000 tons of material with Chicago and Pittsburgh mills, the quantity being about equally divided between Shapes and Plates. The demand for Structural Material for buildings has been rather light for some time past and the mills are in a position to make prompt deliveries. There has just been placed, however, by the City Investment Company, of this city, an order for 14,000 tons of Shapes and a Pittsburgh shop has taken 4000 tons for the new plant of the Standard Steel Car Company at Hammond, Ind. Bridge work is coming out quite freely. The Northern Pacific road has placed 8000 tons and has 10,000 tons more to give out. The Rock Island wants from 4000 to 5000 tons and the South & Western road about 20,000 tons of Bridge Material.

The expected announcement of an advance on Sheets and Tin Plate, which is to be made to-day, has not yet come to hand.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Oct. 24, 1906.	Oct. 17, 1906.	Sept. 26, 1906.	Oct. 25, 1905.
<b>PIG IRON, Per Gross Ton:</b>				
Foundry No. 2, Standard, Philadelphia	\$21.50	\$21.00	\$20.50	\$17.50
Foundry No. 2, Southern, Cincinnati	20.50	20.00	19.00	15.75
Foundry No. 2, Local, Chicago	22.00	21.50	20.00	17.75
Bessemer, Pittsburgh	20.85	20.35	19.60	16.85
Gray Forge, Pittsburgh	19.85	19.35	17.85	15.85
Lake Superior Charcoal, Chicago	22.00	21.00	20.50	18.50
<b>BILLETS, &amp;c., Per Gross Ton:</b>				
Bessemer Billets, Pittsburgh	28.00	28.00	28.00	26.00
Forging Billets, Pittsburgh	35.00	34.00	34.00	29.00
Open Hearth Billets, Phila.	32.00	33.00	32.00	28.00
Wire Rods, Pittsburgh	35.00	34.50	34.00	32.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
<b>OLD MATERIAL, Per Gross Ton:</b>				
O. Steel Rails, Chicago	18.50	18.00	17.00	14.50
O. Steel Rails, Philadelphia	18.50	18.50	18.50	17.50
O. Iron Rails, Chicago	26.50	26.00	25.50	22.50
O. Iron Rails, Philadelphia	25.50	25.00	25.00	22.50
O. Car Wheels, Chicago	20.00	19.25	19.00	16.50
O. Car Wheels, Philadelphia	21.50	20.75	19.00	17.00
Heavy Steel Scrap, Pittsburgh	16.75	16.75	17.50	16.50
Heavy Steel Scrap, Chicago	16.50	16.50	16.50	14.50
<b>FINISHED IRON AND STEEL, Per Pound:</b>				
	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.83½	1.83½	1.83½	1.83½
Common Iron Bars, Chicago	1.71½	1.71½	1.71½	1.80
Common Iron Bars, Pittsburgh	1.60	1.60	1.60	1.74½
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.84½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.84½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.50
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.55
<b>SHEETS, NAILS AND WIRE, Per Pound:</b>				
	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.15
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Cut Nails, Pittsburgh	1.90	1.90	1.90	1.05
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
<b>METALS, Per Pound:</b>				
	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	22.25	22.00	20.00	16.62½
Spelter, St. Louis	6.20	6.12½	6.25	6.10
Lead, New York	5.90	5.95	5.95	5.25
Lead, St. Louis	5.90	5.90	5.85	5.10
Tin, New York	43.25	43.40	40.40	32.60
Antimony, Hallett, New York	25.00	24.75	24.00	12.50
Nickel, New York	45.00	45.00	45.00	40.00
Tin Plate, Domestic, Bessemer, 100 lb., New York	\$3.94	\$3.94	\$3.94	\$3.49

## Chicago.

FISHER BUILDING, October 24, 1906.—(By Telegraph.)

Sharp advances have again been made on all grades of Pig Iron despite the limited transactions of the week, and the lack of transportation facilities, coupled with the pig metal shortage, is favorable to the enforcement of still higher values by producers. For shipment the remainder of the year local stacks are asking \$22 to \$23 for No. 2, and Southern grades have sold as high as \$19, Birmingham, equivalent to \$22.90, Chicago. The urgency of consumers' needs is now the only price controlling factor, and a period of inclement weather that will interfere with railroad operations will develop an active market for spot iron. For the past 10 days Western railroads have been diverting all available rolling stock from regular trade channels for the crop movement, resulting in a car shortage more pronounced than ever before experienced at this season. In the South iron is accumulating in furnace yards, owing to inefficient transportation facilities, and deliveries are already deferred from four to six weeks. There is likewise an accumulation of material at local finishing mills, and no relief is promised by the railroads for the ensuing three months. In finished lines consumption shows no signs of abatement, and the buying of Wire Nails and other Wire products this month is almost on a par with the same period in September. The American Shipbuilding Company has placed additional contracts for Steel aggregating 30,000 tons with the Illinois and Carnegie Steel companies, to be used in the construction of lake boats recently ordered. The tonnage is almost evenly divided between Plates and Shapes. On Plates local mills have specifications covering two months' output and orders for practically a year's production, although eastern Pennsylvania mills are better situated as to deliveries and are promising shipment in two to three weeks. Structural con-



tracts secured by the American Bridge Company aggregate 10,000 tons, of which 8000 tons for bridges were placed by the Northern Pacific Railroad. The structural mills, however, are well up on orders and can make almost prompt deliveries. The scarcity of Steel Billets and Pig Iron is reflected in the advancing tendencies of the old Material market. Old Iron Rails have advanced to \$26.50 to \$27, Iron Axles to \$25, Steel Axles to \$23 and Rerolling Rails to \$19.75. The increased use of Cast Scrap, owing to the Pig Iron shortage, has also resulted in higher values for this grade. Producers of by-product Coke report only a small tonnage available until the middle of next year, and shipments from the West Virginia fields are delayed by the car shortage.

**Pig Iron.**—Price advances ranging from \$1 to \$1.50 a ton have been recorded on both Northern and Southern grades for early delivery, while the Sloss-Sheffield Steel & Iron Company has established a higher basis for second quarter shipments and is quoting No. 2 at \$18.25, Birmingham. Another large interest, however, is asking only \$17 for first quarter requirements, and \$17.50 for the second quarter, while for shipment the remainder of the year prices range from \$18 to \$19. Sales have largely been limited to small lots for early needs, consumers showing no disposition to buy heavily at present prices. Local stacks, which are practically sold up through the first half, are asking \$21.50 to \$22 for their unsold tonnage and as high as \$22.50 has been paid for car lots on track. We quote as follows, f.o.b. Chicago:

Lake Superior Charcoal.....	\$22.00 to \$22.50
Northern Coke Foundry, No. 1.....	22.50 to 23.00
Northern Coke Foundry, No. 2.....	22.00 to 22.50
Northern Coke Foundry, No. 3.....	21.50 to 22.00
Northern Scotch, No. 1.....	22.50 to 23.00
Ohio Strong Softeners, No. 1.....	22.30 to 22.80
Ohio Strong Softeners, No. 2.....	21.80 to 22.30
Southern Coke, No. 1.....	21.40 to 21.90
Southern Coke, No. 2.....	20.90 to 21.40
Southern Coke, No. 3.....	20.40 to 20.90
Southern Coke, No. 4.....	19.90 to 20.40
Southern Coke, No. 1 Soft.....	21.40 to 21.90
Southern Coke, No. 2 Soft.....	20.90 to 21.40
Southern Gray Forge.....	19.40 to 19.90
Southern Mottled.....	18.90 to 19.40
Malleable Bessemer.....	22.00 to 23.00
Standard Bessemer.....	21.80 to 22.30
Jackson Co. and Kentucky Silvery, 6 %	24.30 to 24.80
Jackson Co. and Kentucky Silvery, 8 %	26.30 to 26.80
Jackson Co. and Kentucky Silvery, 10 %	28.30 to 28.80

**Metals.**—Numerous small sales are made of Copper for spot delivery and at extremely high prices, sellers profiting on Copper bought some time ago. The demand is also active on future business, and for January delivery prices are from 23c. to 23½c. Pig Tin has advanced another ½c., but aside from this commodity and Copper no price changes have occurred, although the market is strong, with the tendency on all metals upward. An advance on Sheet Zinc is looked for in the near future. We quote: Casting Copper, 23½c. to 24½c.; Lake, 24c. to 24½c., in car lots for prompt shipment; small lots, ¼c. to ¾c. higher; Pig Tin, car lots, 45½c.; small lots, 46¼c. to 46½c.; Lead, Desilverized, 6.10c. to 6.20c., for 50-ton lots; Corroding, 6.80c. to 6.90c., for 50-ton lots; on car lots, 2¼c. per 100 lb. higher; Cookson's Antimony, 28½c., and other grades, 26½c. to 27½c.; Sheet Zinc is 7.75c. list, f.o.b. LaSalle, in car lots of 60-lb. casks. On Old Metals we quote: Copper Wire, 18¾c.; Heavy Copper, 18¼c.; Copper Bottoms, 17¼c.; Copper Clips, 18c.; Red Brass, 18c.; Red Brass Borings, 16c.; Yellow Brass, 13¼c.; Yellow Brass Borings, 12¼c.; Light Brass, 9¼c.; Lead Pipe, 5.40c.; Tea Lead, 5c.; Zinc, 5c.; Pewter, No. 1, 26c.; Tin Foil, 32c.; Block Tin Pipe, 27½c.

**Billets and Rods.**—The Steel market has latterly been comparatively quiet and there have been no transactions of note, although an inquiry for 5000 tons of Axle Billets still remains unplaced. The buying of Rods is limited, as all the large consumers placed contracts for their requirements some time ago. We quote Forging Billets at \$35 to \$36 for prompt delivery and \$34 on contracts extending through the first half of next year. Basic and Open Hearth Rods are now firmly held on the basis of \$34, Pittsburgh, equivalent to \$37, Chicago, although shipments on contracts are being made on the basis of \$35, f.o.b. Chicago.

**Rails and Track Supplies.**—An advance of \$3 a ton has been made on Spikes by the Illinois Steel Company, which establishes a basis of 2.25c. for the material for future delivery. Small lots for prompt shipment are selling at 2.50c. and as high as 3c. has been paid. Light Rails continue exceedingly active notwithstanding the recent advance and the leading interest already has contracts on its books extending well into the second quarter of next year. The only order for standard sections of note was that placed by the St. Joseph Valley Railroad with the Cambria Steel Company, amounting to 1200 tons. Quotations are as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.27½c. to 2.50c., according to delivery; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$30 to \$31; 25-

lb., \$32; 20-lb., \$32; 16-lb., \$34; 12-lb., \$35, f.o.b. mill. Standard Sections, \$28, f.o.b. mill, full freight to destination.

**Structural Material.**—The American Shipbuilding Company has placed contracts for additional Shapes for lake boats recently placed. The tonnage was divided between the Illinois and the Carnegie Steel companies and embraces practically 15,000 tons. The American Bridge Company reports the following orders: Chicago & Northwestern Railroad, 975 tons; Duluth & Iron Range, 625 tons; Chicago Junction, 600 tons; Calumet & Arizona, 125 tons and a warehouse for Rothschilds & Co., Chicago, 650 tons. Notwithstanding the heavy consumption all the mills are in position to make fairly prompt deliveries and construction work is not being interfered with by shortage of material. On the other hand, the shops of Structural fitters are congested and delays are entirely attributable to the lack of this capacity rather than that of the Structural mills. There is an active demand for material from store which is quoted at 2.05c. to 2.10c. Mill quotations are unchanged, as follows: Beams and Channels, 3 to 15 in., inclusive, 1.86½c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.86½c.; larger than 6 in. on one or both legs, 1.90½c.; Beams, larger than 15 in., 1.96½c.; Zees, 3 in. and over, 1.86½c.; Tees, 3 in. and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending and other shop work.

**Plates.**—Shipbuilding interests have again placed large contracts for Plates to be used in the construction of lake boats recently ordered. The tonnage for the two aggregates 15,000 tons. While the Eastern mills are in position to make fairly prompt deliveries of both Sheared and Universal sizes, Western mills have specifications on their books for at least 60 days' work, while the tonnage carried in the form of contracts covers the output for nearly a year. Prices are as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 in., 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 in., 1.86½c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in., up to 60 in. wide, 2.10c. to 2.20c.; 72 in. wide, 2.35c. to 2.45c.; No. 8, up to 60 in. wide, 2.15c. to 2.25c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Premiums of \$2 a ton over established store prices are now being asked on both Black and Galvanized Sheets by local distributors. Stocks generally are badly broken and great difficulty is experienced in securing shipments of assorted sizes from the mills. New business, however, is light, as deliveries are now being made of material purchased several months ago. Quotations are unchanged, as follows: Blue Annealed, No. 10, 1.91½c.; No. 12, 1.96½c.; No. 14, 2.01½c.; No. 16, 2.11½c.; Box Annealed, Nos. 17 to 21, 2.41½c.; Nos. 22 to 24, 2.46½c.; Nos. 25 and 26, 2.51½c.; No. 27, 2.56½c.; No. 28, 2.66½c.; No. 29, 2.81½c.; No. 30, 2.91½c. Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 15 and 16, 2.81½c.; Nos. 17 to 21, 2.96½c.; Nos. 22 to 24, 3.11½c. Nos. 25 and 26, 3.31½c.; No. 27, 3.51½c.; No. 28, 3.71½c.; No. 30, 4.21½c. Sheets from store: Blue Annealed, No. 12, 2.15c. to 2.25c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.60c. to 2.70c.; Nos. 22 to 24, 2.65c. to 2.75c.; No. 26, 2.70c. to 2.80c.; No. 28, 2.85c. to 2.95c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3.10c. to 3.20c.; Nos. 22 to 24, 3.35c. to 3.45c.; No. 26, 3.45c. to 3.55c.; No. 27, 3.55c. to 3.75c.; No. 28, 3.85c. to 3.95c.; No. 30, 4.45c. to 4.55c.

**Bars.**—Although several of the local jobbers are now asking 2c. on Steel Bars from stock, one large interest is still maintaining a basis of \$3 a ton less, or 1.85c., Chicago. Mill shipments are delayed from three to four months, and as yet none of the mills has succeeded in gaining on specifications. The requirements of Western implement plants are unprecedentedly heavy, and in several instances to secure quick shipment of material an advance of \$2 a ton has been paid mills that are now quoting on the basis of 1.60c., Pittsburgh. The Republic Iron & Steel Company is still firmly quoting Iron Bars at 1.60c., Pittsburgh, although some of the small makers are accepting desirable orders at \$1 to \$2 a ton less than this rate. The volume of new business is increasing, and the strength of the Old Material market in addition may soon result in the establishment of the price maintained by the leading interest for several months. We quote as follows: Iron Bars, 1.71½c.; Steel Bars, 1.66½c. to 1.76½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

**Merchant Pipe.**—Although it has been rumored that another advance on Black and Galvanized Pipe would be

made shortly there is evidently no foundation for this report. All the independent makers are maintaining the new basis, and, owing to the increased cost and scarcity of Skelp, there is little likelihood of these discounts being shaded. We revise discounts, car lots, Chicago, as follows: Black Steel Pipe, 77.35, on the base sizes,  $\frac{3}{4}$  to 6 in., and Galvanized, 67.35. From store in small lots Chicago jobbers quote 74½ to 75 per cent. on Black Steel Pipe,  $\frac{3}{4}$  to 6 in.

**Boiler Tubes.**—Consumption is heavy and local distributors report an increasing volume of business from store. Prices are also being well maintained, indicating that the mills are not suffering from want of business. Mill quotations are unchanged as follows, on base sizes 2½ to 5 in., in carload lots: Steel Tubes, 68.35; Iron, 55.35; Seamless, 50.35; 2½-in. and smaller and lengths over 18 ft., and 2½-in. and lengths over 22 ft., 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in.....	40	35	42½
1½ to 2¼ in.....	50	35	35
2½ in.....	52½	35	30
2½ to 5 in.....	60	47½	42½
6 in and larger.....	50	35	..

**Merchant Steel.**—Specifications for all lines of Merchant Steel are rapidly accumulating at the mills, as the requirements of Western implement manufacturers are greater than ever before in the history of the trade. New business is light, inasmuch as the needs of practically all the large consumers have been covered by contracts up to the first of the year and in many cases to July 1. We quote: Planished or Smooth Finished Tire Steel, 1.86½c.; Iron Finish, up to 1½ x ½ in., 1.81½c.; Iron Finish, 1½ x ½ in. and larger, 1.66½c., base; Channels for solid rubber Tires,  $\frac{3}{4}$  to 1 in., 2.16½c. and 1½-in. and larger, 2.06½c.; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.96½c.; Cutter Shoe, 2.35c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots and 45 per cent. in less than car lots, in base territory.

**Cast Iron Pipe.**—Proposals for the Pipe requirements for Columbus, Ohio, amounting to 1100 tons, were rejected, as the price quoted was considered too high. Only one bid was received, and that was made by the United States Cast Iron Pipe & Foundry Company, on the basis of \$32 a ton for all sizes ranging from 4 to 36 in. The fact that this company was the only bidder is indicative of the strength of the market and the congested conditions prevailing at all the pipe foundries. We make the following quotations: Water Pipe, 4-in., \$34; 6, 8, 10 and 12 in., \$33; over 12-in., \$32, with \$1 extra for Gas Pipe.

**Coke.**—The recent heavy buying of Connellsville Coke on the part of the United States Steel Corporation has been reflected in foundry grades, which are now held at \$3.75 to \$4 at the ovens for early shipment. Furnace Coke for delivery next year has been advanced to \$3.25, and is quoted at \$5.60 Chicago. By-product Coke is now maintained at a minimum of \$6.40, and Virginia producers are asking \$5.75 to \$6.

**Old Material.**—The Rock Island, the Chicago, Burlington & Quincy and the Chicago, Milwaukee & St. Paul railroads this week will dispose of approximately 8000 tons of Old Material, the desirable grades, such as Wrought Scrap, Heavy Melting Steel and Steel Rails, predominating. The increased cost of Pig Iron, coupled with delayed shipments, has resulted in developing an exceedingly active market for Cast Scrap and Railroad Malleable. Prevailing prices are also conducive to an increased percentage of Old Material in the charges, although it is probable that the market will be higher under the continued heavy buying. Heavy purchases of Car Wheels are reported and prices have advanced slightly. The outcome of country Scrap is comparatively light, as the smaller dealers are holding for still higher prices. Quotations on gross tons, car lots, f.o.b. Chicago, are as follows:

Old Iron Rails.....	\$26.50 to \$27.00
Old Steel Rails, 4 ft. and over.....	19.50 to 20.00
Old Steel Rails, less than 4 ft.....	18.50 to 19.00
Heavy Relaying Rails, subject to inspection, 50 lb. and under.....	28.50 to 29.00
Old Car Wheels.....	20.00 to 20.50
Heavy Melting Steel Scrap.....	16.50 to 17.00
Frogs, Switches and Guards.....	17.50 to 18.00
Mixed Steel.....	14.00 to 14.50

The following quotations are per net ton:

Iron Fish Plates.....	\$20.00 to \$20.50
Iron Car Axles.....	25.00 to 25.50
Steel Car Axles.....	22.50 to 23.00
No. 1 Railroad Wrought.....	17.50 to 18.00
No. 2 Railroad Wrought.....	16.50 to 17.00
Railway Springs.....	15.50 to 16.00
Locomotive Tires, smooth.....	16.00 to 16.50
No. 1 Dealers' Forge.....	13.50 to 14.00
Mixed Bushing.....	11.50 to 12.00
Iron Axle Turnings.....	10.00 to 10.50
Soft Steel Axle Turnings.....	10.00 to 10.50
Machine Shop Turnings.....	10.00 to 10.50
Cast Borings.....	8.50 to 9.00
Mixed Borings, &c.....	8.50 to 9.00
No. 1 Mill.....	10.00 to 10.50
No. 2 Mill.....	9.00 to 9.50
No. 1 Boilers, cut to Sheets and Rings.....	12.00 to 12.50

No. 1 Cast Scrap.....	16.00 to 16.50
Stove Plate and Light Cast Scrap.....	12.00 to 12.50
Railroad Malleable.....	15.50 to 16.00
Agricultural Malleable.....	14.50 to 15.00

## Philadelphia.

REAL ESTATE TRUST BUILDING, October 23, 1906.

The Iron and Steel markets are as strong and as active as they have been at any time since the present movement began. Prices are at the highest level yet reached, while the demand for Pig Iron is insatiable. But at this point it would be in order to expect a pause in the upward movement, if not something of a reaction. The situation is strong enough to make it certain that there cannot be any serious decline, although when the turn once comes and is based on legitimate influences it is difficult to determine how far it will run. That some important changes in conditions have been made and are still pending can be readily seen. The increase in the home production of Pig Iron is one feature of significance, and another is the increasing imports of nearly all grades of Pig Iron. A cargo of Middlesbrough Iron is unloading in Philadelphia, while Scotch Iron is afloat for Boston, New York and Philadelphia, all of which is bound to be felt before long, but for the time being everything goes at full prices, so that it is not the actualities of the present so much as the probabilities of the future that have to be considered. So long as increased production and importations were theories no great impression was made, but when they become actual facts the result may be very different. Nevertheless, the immediate situation is one of great strength, and even for long deliveries there is a demand at full prices for everything that sellers are willing to quote on, indicating a degree of confidence among consumers which is presumably based on known conditions as regards their own individual interests.

**Pig Iron.**—The situation in the Iron trade is very complex. Prices vary to such an extent that it is difficult to give them with much definiteness, but where any changes have been made since last week they have been all in one direction, namely, upward. This applies quite as much to 1907 deliveries as to those for 1906, although the premium for prompt shipments is maintained. Perhaps there is not quite as much difference as there was between 1906 and 1907 shipments, but that is only natural as the dates come nearer together, and besides that more Iron is being made and receipts from abroad are beginning to have some influence as regards deliveries in the near future. The difficulty in getting suitable labor hampers many of the furnaces and besides that, coal and coke and ores are hard to get in suitable quantities, so that there are uncertainties which baffle the clearest minds. The volume of business, however, is very heavy and prices are extremely strong. No. 2 X Foundry for 1906 delivery is taken at \$22.50 to \$23.50; Gray Forge Iron at \$19.25 to \$19.50; and No. 3 Middlesbrough at \$20.75 to \$21 on dock. A large tonnage of Basic Iron has been taken at prices beginning at \$19.65, working from that to \$20.25 delivered, but \$20.50 would now be an inside figure for additional quantities, and more than that for 1906 shipments. Malleable Iron has been sold in round lots at \$23 for 1906 shipments, and \$22 to \$22.50 for the first and second quarters of 1907. On such a market quotations must necessarily have a wide range, depending as they do on the circumstances in each particular case, but for eastern Pennsylvania and adjoining districts the following would be a fair average for deliveries during first and second quarters of 1907.

No. 1 X Foundry.....	\$23.50 to \$24.00
No. 2 X Foundry.....	21.50 to 22.75
No. 2 Plain.....	21.50 to 22.25
Standard Gray Forge.....	18.75 to 19.50
Ordinary Gray Forge.....	18.00 to 18.50
Basic.....	20.25 to 20.50
Low Phosphorus.....	25.75 to 26.25
Malleable.....	22.00 to 23.00

**Steel Alloys.**—There is nothing doing in Alloys, but prices are said to be easier, although there is no great pressure to sell. Quotations are nominally about \$80 to \$82 for spot Ferromanganese, and from \$74 to \$76 for 1907 shipments; Ferrosilicon, \$98 to \$100 for 1906, and about \$33 for 11 per cent.

**Steel.**—There is a good demand for Steel, but local mills are not in a position to accept much if any business for this year's delivery. Prices for first quarter of 1907 are about \$32 to \$33 for ordinary Steel Billets and \$36 to \$40 for Forging Billets.

**Plates.**—Business is extremely active, mills having larger specifications on their books than ever before. The advance in Pig Iron has induced many of the large consumers to place orders for Plates, so as to secure themselves in case of an advance, which certainly ought to follow the increased cost of raw materials, but which for the present are unchanged, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.73½	1.78½
Flange or Boiler Steel.....	1.83½	1.88½
Marine.....	2.13½	2.18½
Locomotive Firebox Steel.....	2.23½	2.28½



The above are base prices for  $\frac{3}{4}$ -in. and heavier. The following extras apply:

	Extra per 100 pounds.
3-16 in. thick.....	\$0.10
Nos. 7 and 8, B. W. G.....	.15
No. 9, B. W. G.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00

**Structural Material.**—A good enough business is going, but deliveries are made without much delay. The day to day demand is good, but there are so many mills and the capacity is so large that consumers feel that they can get almost anything they want, so that the situation is comfortable on both sides. Prices are unchanged at 1.83 $\frac{1}{2}$ c. to 2c. for Beams, Angles and Channels, according to specification.

**Bars.**—Business in this department is in a somewhat peculiar condition, inasmuch as prices have not advanced in proportion to the increased cost of production. There are some idle mills yet, but fair deliveries can be made, so that new business is not as active as it might be. Specifications are mostly on material bought at lower prices, so that there is not much gravity for the current deliveries. There should be a distinct improvement in the near future, but so far Bar Iron has not shown the improvement that was expected, although the persistently low prices of Steel Bars have no doubt had some influence in keeping them down. About 1.83 $\frac{1}{2}$ c. to 1.88 $\frac{1}{2}$ c. is quoted for Refined Bar Iron and 1.73 $\frac{1}{2}$ c. to 1.78 $\frac{1}{2}$ c. for Steel, but deliveries on the latter are very uncertain.

**Sheets.**—There is a good demand, but no change in prices, which remain as follows for mill shipments in carload lots and a tenth additional for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c., and No. 28, 2.90c.

**Old Material.**—A change of tone is manifested in regard to Old Material. Holders are as far down as they are inclined to go, and those who are disposed to buy have to pay a little more money to get what they want. There is no distinct change in prices yet (except in Car Wheels, which are extremely scarce), but it seems highly probable that the average of prices before the end of the month will be higher than they are to-day. Bids and offers for deliveries in buyers' yards are about as follows:

Steel Crops.....	\$18.50 to \$18.75
No. 1 Steel Scrap.....	18.00 to 18.50
Low Phosphorus Scrap.....	22.50 to 23.00
Old Steel Axles.....	22.50 to 23.00
Old Iron Axles.....	31.00 to 31.50
Old Iron Rails.....	25.50 to 26.50
Old Car Wheels.....	21.50 to 22.50
Choice Scrap, R. R. No. 1 Wrought.....	22.00 to 22.50
Choice No. 1 Yard Scrap.....	19.00 to 20.00
Long and Short.....	18.50 to 18.75
Machinery Scrap.....	18.50 to 19.00
Wrought Iron Pipe.....	16.00 to 16.50
No. 1 Forge Fire Scrap.....	16.00 to 16.50
No. 2 Light Ordinary.....	11.50 to 12.00
Wrought Turnings.....	14.25 to 14.75
Axle Turnings, Choice Heavy.....	15.25 to 15.75
Stove Plate.....	13.50 to 14.00
Cast Borings.....	11.25 to 11.50
Grate Bars.....	13.50 to 14.00

## Cleveland.

CLEVELAND, OHIO, October 23, 1906.

**Iron Ore.**—This year vessel owners will have all their contract Ore moved a long while before the close of navigation, whereas in former years many of them were not able to complete their contracts. The Steel Corporation expects to have all its contract Ore started down the lakes by November 4. Other shippers are getting their Ore down so fast that most of the contracts will have been cleaned up by November 15. The reason for this is that vessel capacity has been so great this year that the owners have had plenty to take care of all contracts and still boats enough to move what wild material came on the market. Most shippers are now paying 80c. from Duluth to Ohio ports on wild Ore cargoes, but the Steel Corporation is among those who are not. Ore shippers are still trying to avoid making sales for 1907 delivery. It is now agreed there will be a general advance. The differential between Bessemer and non-Bessemer Ores is also likely to be increased. The Ore Association this year will not be a factor either in prices or in production, since it has become a statistical body and nothing more. The market will be open, therefore, each shipper making his own terms. On the present consumption of Ore, estimates are extant that the 1907 production will exceed 40,000,000 tons. This will depend upon the ability of the individual mines to produce the amount required of them to make up the total. This in turn will depend largely on the labor situation.

**Pig Iron.**—The strength of the market for Foundry Iron has been accentuated the past week by the appearance of some good sized inquiries for delivery over the remainder of this year, and some big inquiries for delivery the first quarter of next year, after the furnaces had practically

withdrawn from the market for those periods. The strength is increased also by the statement that some of the furnaces in this territory are far behind their contract requirements, and that some of their customers, having been disappointed, are on the market for Iron for immediate shipment. The market responded to this situation by a further tightening of prices that has lifted the general level of quotations. Some sales of No. 2 have been made for spot shipment as high as \$22.50 at the furnace, although most sales were on the basis of \$22. Prices are now \$20 to \$20.50 for first quarter, with sales being made for first half delivery at \$19.50, Valley furnace. Basic and Bessemer are stronger, with the supply limited, although prices have not changed much.

**Coke.**—On account of an aggravated shortage of cars in this territory the Coke market is growing stronger. Many producers have advised their regular customers to lay in an additional supply against an even worse car shortage in the near future. Quotations are \$3 at oven for Furnace Coke and \$3.75 for 72-hr. Foundry Coke.

**Finished Iron and Steel.**—Much of the current business for spot delivery is at premium prices. One of the most aggravated cases is in Steel Bars. Heavy Bars were scarce all summer, but the lighter Bars were easy. Now the mills are offering to make deliveries only after 60 to 90 days, or even longer, and some of the consumers having rush needs have been buying freely at premium prices. Sales have been made at 1.75c. at the mill, against the official price of 1.50c., Pittsburgh, while buying out of stock at 1.80c. has been heavier than usual. Bar Iron is also selling at a premium. Most mills in this territory disregard the official price of 1.60c., Pittsburgh, and have sold at 1.70c. Pittsburgh, and even higher. All sorts of Plates are hard to obtain on quick shipment, but Universal Plates are most scarce. Some of the Eastern mills doing business in this territory on rush orders have advanced prices \$2 a ton over the official rate, but the orders going in that direction have not been curtailed as a result. The same is true of Structural Steel to a large extent, deliveries on which are slow, even from the largest mills. Forging Billets seem to have become more scarce, and this week some sales have been made as high as \$37.50, delivered in Cleveland, with general quotations ranging from \$36.75 to \$37.50, delivered. Re-rolling Billets have been even more scarce, \$28.50 to \$29 having been paid on contracts, while smaller lots for prompt delivery have sold at \$30 at the mill. Sheets are stronger, with many of the mills getting behind with their deliveries. Most of the sales have been made out of stock, prices being unchanged at 2.15c. for No. 10 Blue Annealed; 2.80c. for No. 28 One Pass Cold Rolled, and 3.80c. for No. 28 Galvanized.

**Old Material.**—Due to the scarcity of all sorts of semi-finished material the Scrap market has been strong, despite a liberal supply. The following are dealers' prices to the trade, f.o.b. Cleveland, per gross ton: Old Steel Rails, \$17.50 to \$18.50; Old Iron Rails, \$25 to \$26; Iron Car Axles, \$20 to \$21; Heavy Melting Steel, \$17.50 to \$18.50 per net ton; Cast Borings, 9.50 to \$10.50; No. 1 Busheling, \$15.50 to \$16; No. 1 Railroad Wrought, \$17.50 to \$18.50; No. 1 Cast, \$16 to \$17; Iron and Steel Turnings and Drillings, \$11.50 to \$12.50.

The M. Cohen & Son Company announces that on October 15 it absorbed and succeeded to the business in Iron and Steel Scrap, which had been conducted by Cohen, Nagusky & Co., at 180-194 Willson avenue, Cleveland, Ohio. The new company consists of Max Cohen and his son, Myron E. Cohen, who have purchased Joseph Nagusky's entire interest in the business. All contracts and liabilities of the old firm have been assumed by the new company.

## Birmingham.

BIRMINGHAM, ALA., October 21, 1906.

**Pig Iron.**—The Iron market, while quiet so far as sales are concerned, is extremely strong, a number of producers during the past week advancing quotations to \$16.50 for No. 2 Foundry for delivery the first quarter of next year. Probably \$16 could be done on contracts extending through the first half, as few furnaces have sold heavily for the second quarter and all are anxious to include requirements for that delivery in contracts. On sales for immediate shipment \$18 to \$19 has been paid in a number of instances, and producers are claiming the price will go to \$20 within the next few weeks. One of the largest brokerage concerns in the country is out with a circular letter requesting inquiries for spot Iron, stating that it can probably furnish the buyer's requirements. It would therefore seem that speculators have secured a certain amount of Iron despite the assertion of the producers that none would be sold them. Production for October, it is expected, will show a gratifying increase over the past few months, notwithstanding that unfavorable weather conditions prevailed for several days, retarding operations. There is a movement on foot to start three of the furnaces in the district which have been idle for several years, but plans have not yet been fully developed. The furnace

of the Lookout Mountain Iron Company at Battelle, which is to be sold by the receiver November 5, will undoubtedly be placed in operation as soon as practicable after the transfer. In fact, it looks now as if production by the end of the year would be at high water mark, so far as this State is concerned. Labor conditions are comparatively easy and will be even more favorable after the cotton picking season is ended, which will be much earlier than usual this year owing to recent heavy frosts. The car situation remains about the same as for the past few weeks, but it is not so much a shortage of cars as a congestion of railroad transportation in the South, due to exceedingly heavy traffic and insufficient motive power, that is delaying deliveries.

**Cast Iron Pipe.**—No material change in conditions which have been prevailing for several months is yet noticeable. No foundry in this district is willing to accept orders for small sizes for delivery under 90 days. Some orders are being booked for delivery the first part of next year, but buying for this period has not started here to any extent, both purchasers and manufacturers seeming to prefer to await a more settled condition of the Iron market. Quotations made on Water Pipe by the leading foundries here this week are as follows: 4 to 6 in., \$31; 8 to 12 in., \$30; over 12 in., \$27.50, with \$1 per ton extra for Gas Pipe. On large contracts these prices might be slightly shaded.

**Old Material.**—Dealers express themselves as being entirely satisfied with conditions at present prevailing. They find ready sale for all grades, and the amount of business being done is only limited by the quantity of Scrap they are able to secure. Quotations are approximately as follows per gross ton, f.o.b. cars, dealers' yards here:

Old Iron Rails.....	\$19.50 to \$20.00
Old Iron Axles.....	18.50 to 19.00
Old Steel Axles.....	16.00 to 17.00
Old Car Wheels.....	16.50 to 17.50
No. 1 Railroad Wrought.....	16.50 to 17.00
No. 2 Railroad Wrought.....	14.50 to 15.00
No. 1 Country Wrought.....	14.50 to 15.00
No. 2 Country Wrought.....	11.50 to 12.00
Wrought Pipe and Flues.....	11.50 to 12.00
Railroad Malleable.....	13.00 to 13.50
No. 1 Steel.....	13.00 to 13.50
No. 1 Machinery Cast.....	14.00 to 14.50
Stove Plate and Light Cast.....	10.00 to 10.25
Cast Borings.....	7.00 to 7.50

## Cincinnati.

FIFTH AND MAIN STS., October 24, 1906.—(By Telegraph.)

**Pig Iron.**—As the days go by the situation becomes more strenuous and spot Iron more difficult to obtain. Reports indicate that the available tonnage has been exhausted to such an extent that consumers who failed to anticipate the situation are finding it a very difficult proposition to supply their daily needs. One of the most noticeable features of the situation is the trouble that is being experienced in getting deliveries made as originally contracted for. This is attributable to several reasons, the most influential being the car shortage, which is steadily increasing, while irregular furnace operations, due to existing labor conditions, are also having an unfavorable effect. A large number of consumers who are in the market for more or less tonnage for the remainder of the year are compelled to pick up a carload here and there as opportunity offers. It is thought that while considerable reserve furnace capacity will be available before long, even then there will not be sufficient Iron made to change conditions materially. All warrant Iron is also said to be practically exhausted, so that there is little to be expected from that source. Gray Forge, while in moderate demand, is scarce, being offered in odd lots as the furnaces may make from week to week. Malleable Bessemer and Basic are very strong, with the market almost bare for nearby shipments. There is a very limited supply of Ohio Silvery 8 per cent. on the market, late sales being reported on the basis of \$25 at furnace. One large melter who is said to have contracted for enough Iron to meet requirements is unable to get it promptly and is on the market to-day for quite a heavy tonnage of the Soft grades. It is a somewhat difficult matter to exactly determine quotations for spot Iron, as prices are governed more or less by changing conditions and individual circumstances. As a general proposition, however, \$17.50 to \$18 for the remainder of the year, \$16.50 for first quarter and \$16 for second quarter, Birmingham, are fairly well established. Northern Irons, which are practically unobtainable, are said to be \$21 to \$22 for spot and \$20 next year at furnace. Freight rates from the Hanging Rock District to Cincinnati are \$1.15, and from Birmingham, \$3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$21.00 to \$21.50
Southern Coke, No. 2.....	20.50 to 21.00
Southern Coke, No. 3.....	20.00 to 20.50
Southern Coke, No. 4.....	19.00 to 19.50
Southern Coke, No. 1 Soft.....	21.00 to 21.50
Southern Coke, No. 2 Soft.....	20.50 to 21.00
Southern Coke, Gray Forge.....	17.75 to 18.25
Southern Coke, Mottled.....	17.00 to 17.50
Ohio Silvery, 8 per cent.....	26.15
Lake Superior Coke, No. 1.....	22.65 to 23.65
Lake Superior Coke, No. 2.....	22.15 to 23.15
Lake Superior Coke, No. 3.....	21.65 to 22.65

## Car Wheel Irons.

Standard Southern Car Wheel.....	\$26.50 to \$27.00
Lake Superior Car Wheel.....	26.00 to 26.50

**Coke.**—The market is strong and prices are very stiff. Foundry shipments on contracts are somewhat delayed on account of the inability of securing sufficient box cars. We quote the best brands of Connellsville and Virginia Foundry Coke from \$3.65 to \$4, f.o.b. ovens.

**Finished Iron and Steel.**—Every department shows continued activity and prices are firm. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.73c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-in. and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire, 1 x ¼ in. or heavier, 1.83c., in carload lots.

**Old Material.**—The demand is strong, with prices showing a slight advance. We quote dealers' prices, f.o.b. Cincinnati, about as follows: No. 1 Railroad Wrought, \$17.50 to \$18.50, net ton; Cast Borings, \$8.50 to \$9.50, net ton; Steel Turnings, \$10.50 to \$11.50, net ton; No. 1 Cast Scrap, \$15.50 to \$16.50, net ton; Iron Rails, \$24, gross ton; Steel Rails, rolling mill lengths, \$16.50 to \$17.50, gross ton; Relaying Rails, 56-lb. and upward, \$27.50 to \$28.50, gross ton; Iron Axles, \$25.50 to \$26.50, net ton; Car Wheels, \$17.50 to \$18.50, gross ton; Low Phosphorus, \$18.50 to \$19.50, gross ton.

## Pittsburgh.

PARK BUILDING, October 24, 1906.—(By Telegraph.)

**Pig Iron.**—The Pig Iron market has reached the stage where it is almost impossible to quote prices, as practically every sale made is at a higher price than the preceding one. It is no longer a question of prices with Pig Iron, but where to get it. Two or three small lots of Standard Bessemer have been sold at \$20, Valley furnace, and about 500 tons of Basic have been sold for spot shipment at \$21, Valley furnace. For delivery the first quarter of next year Bessemer Iron is all of \$20 and Basic \$19.50 to \$20 at furnace. Northern No. 2 Foundry for spot shipment has sold at \$23 at furnace, or \$23.85, Pittsburgh. For delivery in the first quarter Northern No. 2 Foundry is held at about \$22, Valley furnace. We note a sale of 500 tons of Northern Forge Iron for spot shipment at \$20, Valley furnace, and for delivery in the next two or three months this grade is held at about \$19, Valley furnace.

**Steel.**—As yet there is no visible increase in the supply of Steel and very high prices are ruling. Bessemer 4 x 4 Billets are being offered at \$27, Wheeling, or \$27.95, Pittsburgh. Open Hearth Billets are about \$29.50 to \$30, Pittsburgh, while about \$35 is quoted for Forging Billets. Sheet and Tin Bars for prompt shipment are held at about \$30, Pittsburgh, but most consumers are covered by contracts at \$29 or less on which Steel is still due them. It is stated that the Republic Iron & Steel Company and the Youngstown Sheet & Tube Company have entered a large tonnage of Sheet and Tin Bars for delivery over the first six months of next year on the basis of very close to \$30, Youngstown.

(By Mail.)

A steadily advancing market is observed in Pig Iron, with the available supply for prompt delivery getting so scarce that consumers will pay almost any prices asked for prompt shipment. The absolute minimum to-day on Bessemer for prompt shipment is \$20, at Valley furnace, and on Basic about \$19.25 to \$19.50. Northern No. 2 Foundry for prompt delivery has sold as high as \$22, at furnace, while for delivery in first quarter \$21 has been paid. A small lot of Northern Forge for spot shipment has been sold at \$20, at Valley furnace, while the market is firm at \$18.50, at furnace, for forward delivery. The supply of Steel does not seem to be increasing, and the best price at which Bessemer Billets are being offered for reasonably prompt shipment is on the basis of \$27, Wheeling, or \$27.95, Pittsburgh. Open Hearth Billets are very scarce, and would probably bring close to \$30, Pittsburgh, for prompt delivery. In Finished Iron and Steel an enormous volume of new business is being entered by the mills, and with specifications coming in very freely on contracts they are not able to catch up on deliveries to any extent. Premiums are becoming more frequent for prompt delivery on Steel Bars, Sheets and Tin Plate, and on one or two other lines. An advance of \$2 a ton on Steel Hoops is likely to be announced within a short time.



**Ferromanganese.**—The market continues quite firm, and we note a sale of about 100 tons of 80 per cent. Ferro for forward delivery at about \$75, Pittsburgh. We quote 80 per cent. Ferro for prompt shipment at \$80 to \$83, while \$75 to \$77.50 is asked for delivery over the next three or four months.

**Wire Rods.**—An independent Wire mill is in the market for 500 tons of Rods for reasonably prompt shipment, but so far has not been able to find a mill that will take the contract and make deliveries wanted. Bessemer Rods would probably bring very close to \$35, Pittsburgh, for reasonably prompt shipment. For Open Hearth Rods \$36 and higher is being quoted.

**Muck Bar.**—There is some demand for Muck Bar and buyers are having trouble in finding mills that will make deliveries wanted. The market is very firm and we quote best grades of Muck Bar, made from all Pig Iron, at \$32 to \$33, and from part Scrap, \$30 to \$31, Pittsburgh.

**Skelp.**—New demand for Skelp is quiet, but the mills are filled up with contracts on which buyers are specifying freely. We quote: Grooved Steel Skelp, 1.57½c. to 1.65c.; Sheared Steel Skelp, 1.60c. to 1.70c.; Grooved Iron Skelp, 1.65c. to 1.75c.; Sheared Iron Skelp, 1.80c. to 1.85c., Pittsburgh, these prices depending on widths and gauges.

**Steel Rails.**—In the past week the Carnegie Steel Company has booked orders for about 33,000 tons of Standard Sections for next year, of which 15,000 tons was placed by the Texas Pacific. The tonnage in Light Rails booked the past week by the company was fully as large as its output, and on both Standard Sections and Light Rails it is well sold up for delivery through the first half of next year. We quote Light Rails as follows: 20 to 45 lb. Sections, \$31; 16-lb. Sections, \$32, and 12-lb. Sections, \$33, at mill. Standard Sections are \$28, at mill, and it is stated that the mills have already booked about 2,000,000 tons for next year's delivery.

**Structural Material.**—The Standard Steel Car Company, which has bought about 320 acres of land at Hammond, Ind., on which it will build a large plant for the manufacture of Steel cars, has placed an order with the McClintic-Marshall Construction Company for about 4000 tons of Steel, to be used in the buildings. The material for the new buildings for the LaBelle Iron Works at Steubenville, about 1200 tons, has also been placed with a local concern. A good deal of smaller work has been placed, among which are a number of bridges for Western railroads. One Western road is understood to have placed 10,000 tons of Bridge work for next year. The two leading local Structural interests, the American Bridge Company and McClintic-Marshall Construction Company, are filled through the first half of next year or longer. The order books of the smaller Structural concerns are also full of work. Prices are naturally very firm, but are no higher, and we quote: Beams and Channels, up to 15-in., 1.70c.; over 15-in., 1.80c.; Angles, 3 x 2 x ¼ in. thick up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3-in. and larger, 1.70c.; Tees, 3-in. and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-in. are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Plates.**—The Steel car interests are taking the bulk of the tonnage being turned out by the Plate mills, while the boat building interests are also taking a heavy tonnage. Of the eight lake boats placed with the American Shipbuilding Company by the Lackawanna Steamship Company a good part of the Plates and Shapes will be furnished by the Lackawanna Steel Company, but such sizes as that company does not roll will be furnished by the Carnegie Steel Company. The leading Plate mills are filled up on Universal and Sheared Plates for months ahead, the Carnegie Company having practically all its output sold for the first six months of 1907. Prices are very firm, but no higher, and we quote: Tank Plates, ¼ in. thick, 6¼ in. up to 100 in. in width, 1.60c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼ in. to and including 3-16 in.	
Plates on thin edge.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. R. M. A." and ordinary Firebox Steel Plates.....	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell Grade of Steel is abandoned.	

**TERMS.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of ¼ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rec-

tangular shapes 14 in. wide, down to 6 in. of Tank, Ship or Bridge quality.

**Sheets.**—Premiums of \$1 a ton, or more on both Black and Galvanized Sheets are being secured by mills that are able to make deliveries within two or three weeks. A heavy tonnage in Sheets has been placed at present prices for delivery through the first quarter of next year. The trade still expects an early advance in prices. We quote: Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.65c., and No. 30, 2.75c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.80c., and No. 30, 4.05c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.75 per square, and Galvanized Roofing Sheets, No. 28 gauge, \$3.10 per square for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

**Iron and Steel Bars.**—The Steel car interests are placing a heavy tonnage in both Iron and Steel Bars for deliveries running through first half of next year. The Carnegie Steel Company will add a 13-in. Bar mill to its Duquesne Steel Works, which will much increase the output of Steel Bars at this plant. Specifications on contracts continue to come in freely, and the mills are four to eight weeks behind in shipments. The Republic Iron & Steel Company is maintaining Iron Bars at 1.60c. minimum, Pittsburgh, and is entering a good deal of tonnage at this price. We quote Steel Bars at 1.50c. for indefinite delivery, and 1.60c., base, half extras, for delivery in three to four weeks. Iron Bars are held at 1.60c. minimum, with premiums of \$1 to \$2 a ton being paid for reasonably prompt shipment.

**Hoops and Bands.**—New business in Hoops is quite heavy, and with liberal specifications that are coming in on contracts the mills are so crowded that it is very probable that an advance of \$2 a ton, or to 2c. base, will be announced within a short time. We quote: Steel Hoops, 1.90c., and Bands for all purposes at 1.50c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

**Tin Plate.**—Orders being booked for Tin Plate continue heavy, and the mills are crowded with work. The scarcity of Tin Bars restricts output to some extent, and several of the Tin Plate makers advise us they are able to get premiums of 10c. to 15c. a box for reasonably prompt shipment. It is still believed that an advance in prices will be made, but so far there is no official confirmation of this from the leading interests. We quote \$3.75 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

**Railroad Spikes.**—The demand does not show any falling off, and the concerns making Spikes have their order books filled for the next three or four months or longer. We quote Railroad Spikes for forward delivery at \$2.50 to \$2.60 per 100 lb., while for reasonably prompt shipment \$2.75 or higher is quoted.

**Spelter.**—The market is a shade firmer and the demand is better. We quote prime grades of Western Spelter at 6.05c., St. Louis, equal to 6.17½c., Pittsburgh.

**Merchant Pipe.**—The order for 285 miles of 6-in. Line Pipe referred to in this report last week as having been placed by the Pure Oil Company was secured by the National Tube Company and shipments are now going forward on the contract. It is reported that the Texas Oil Company has also placed an order for about 20 miles of 8 or 10 in. Line Pipe. The heavy demand for the larger sizes of Line Pipe, together with the fact that the mills are filled up for three or four months, has brought about higher prices on Line Pipe, the four or five mills making this having put these prices into effect last week. We are advised that the recent advance of \$4 a ton in Merchant Pipe and \$2 on Casing is being firmly held. Several of the mills that roll Iron Pipe will issue a new discount card in a few days, on which discounts will be from 3 to 3½ points higher than on Steel. The extreme discount on Merchant sizes of Steel Pipe is now 79 and 5 per cent. off, to the large trade. The new official discounts which became effective on October 12, but which are shaded one point or more to the large trade, are as follows:

	Merchant Pipe.			
	Jobbers, carloads.		Iron.	
	Black.	Galv.	Black.	Galv.
¾ and ¾ in.....	70	54	69	53
¾ in.....	72	58	71	57
¾ in.....	74	62	73	61
¾ to 6 in.....	78	68	77½	67½
7 to 12 in.....	73	58	72½	57
Extra strong, plain ends:				
¾ to ¾ in.....	63	51	62	50
¾ to 4 in.....	70	58	69	57
4½ to 8 in.....	66	54	65	53
Double extra strong, plain ends:				
¾ to 8 in.....	59	48	58	47

**Boiler Tubes.**—A great deal of business is being placed with the mills for delivery in first quarter of next year. It is believed that an advance will be made before long, as the market is very firm, and some of the mills are averse to taking on a heavy tonnage for forward delivery at present low prices. Official discounts on carloads, which are now being quite firmly held, are as follows:

Boiler Tubes.		Iron.	Steel.
1 to 1½ in.	.....	45	50
1½ to 2¼ in.	.....	45	62
2¼ in.	.....	50	64
2½ to 5 in.	.....	57	70
6 to 13 in.	.....	45	62

**Iron and Steel Scrap.**—The market is quiet and prices are only fairly strong. Dealers quote about as follows, per gross ton, f.o.b. Pittsburgh: Heavy Steel Melting Scrap, \$16.75 to \$17; No. 1 Wrought Scrap, \$19.25 to \$19.50; Old Steel Rails, short pieces for Open Hearth use, \$16.75 to \$17; Old Steel Rails, rerollers, \$18.75 to \$19; Bundled Sheet Scrap, \$15.50 to \$15.75; Cast Iron Borings, \$10.25 to \$10.50; Steel Axles, \$22.50 to \$23; Iron Axles, \$28 to \$28.50; Wrought Turnings, \$12.75 to \$13, and Old Car Wheels, \$19.50 to \$20.

**Coke.**—Semi-official reports are that the Frick Coke Company has bought from outside Coke interests about 240,000 tons of Furnace Coke for delivery in the first half of next year, and about 120,000 tons for delivery in second half, prices ranging from \$2.90 to \$3.10, at oven. These heavy purchases by the Frick Company for delivery so far ahead and at such high prices have naturally firmed up Coke, and strictly Connellsville Furnace Coke for next year's delivery is now held at \$3 a ton at oven and higher. Connellsville 72-hr. Foundry Coke is held at \$3.50 to \$3.75 a ton at oven, and contracts have been made at these prices. Connellsville Furnace Coke for delivery this year is held at about \$2.90 a ton at oven. High Sulphur Cokes sell at \$2.50 to \$2.75 for Furnace and \$3 to \$3.25 for Foundry. Additional contracts for Furnace Coke on an exchange basis of 7 tons of Coke for 1 ton of Bessemer Iron at Valley furnace have been made the past week. The maximum price of the Bessemer Iron on these contracts is \$19, at Valley furnace, and the minimum price is \$11, at furnace.

## The German Iron Market.

BERLIN, October 12, 1906.

The boom in the Iron industry has taken a fresh spurt forward. Price advances are now being made in many lines of goods. A number of advances had been made toward the end of August and early in September, and it was doubted at that time whether any further increase would be recorded during the rest of the year. More recent events, however, show that doubt to have been wide of the mark. Recently the price of Pig Iron has been put up 10 marks the ton, which is the biggest advance made at one time since the present upward movement began. The increase is regarded as indicating that the policy of moderation in the matter of prices hitherto adhered to by the great organizations of the trade has been dropped, and that the manufacturers are determined—as one of them expressed it at a recent company meeting in Westphalia—to get all the advantage possible out of the present boom.

The demand for Pig has grown more urgent and the scarcity of supplies is felt more keenly than in the summer. Iron for immediate delivery is anxiously inquired for at increased prices. There is a very active demand for foundry qualities for delivery before the end of the year, but it cannot be wholly met. Much Iron of this class has been sold for 1907 delivery; the Rhenish-Westphalian Syndicate, however, has discontinued taking orders up to September 1, 1907.

The Siegen Pig Iron Syndicate several days ago announced the sale of 10,000 tons of Spiegeleisen to American buyers at 89 marks. Otherwise little is heard about American buying.

### Advances in Finished Products.

This latest advance in the price of Pig Iron came as a great surprise to consumers, and they are now trying to adjust themselves to the new situation created by it. Price advances on Iron and Steel products are accordingly the order of the day. Within the past few days advances have been announced as follows: Hoop and Band Iron, 5 marks; fine Sheets raised to 165 marks, commercial Bars of Wrought Iron to 165 marks, Horseshoe and Rivet Bars to 175 marks and Steel castings marked up 6 per cent. The price situation is extraordinarily strong and further advances are regarded as certain within a short time. It has been expected in some quarters that the Steel Verband would make another advance in all forms of Steel goods, but no action of the kind has yet been taken. The Verband voted this week, indeed, to pay a bonus of 5 marks per ton upon all half-finished Steel delivered by its members over and above their allotments till the end of the year. This action was decided upon in order to find some relief for the existing famine in half-rolled Steel, which has reached the stage

of a crying evil. The proposed action, however, did not please some of the works. These protested, and now it is said that the Verband has taken backwater.

### A Steel Famine.

The scarcity of material which has been noted in the Iron trade for some months has latterly grown more pronounced. The famine in half-rolled Steel has just been mentioned. This has been intensified through a strike of the workmen at the Rothe Erde Company at Aachen, which has been in progress for about two months. The Verband has been trying to make up for the deficiency by putting on pressure in other quarters, and this was the explanation for the proposed action mentioned above, but relief has not been found. Several rolling mills have already circularized their customers, stating their inability to fill contracts owing to the impossibility of getting sufficient supplies of Steel. One establishment even foreshadows its complete shutdown for that cause.

This scarcity of half-rolled material caused the Verband about three weeks ago to reject a proposition to increase the allotments in class B goods (embracing all Steel products except half-rolled material, Structural forms and Rails) by 10 per cent. Such an increase, however, was made on Steel Tubing. Several other adjustments of allotments took effect at the beginning of this month, which means the third increase since January 1. During the course of the year the allotments in class A goods (half-finished Steel, Structural forms and Rails) have been increased 730,570 tons, or above 14 per cent., while those for class B have been enlarged by 709,860 tons, or above 18½ per cent. This brings the Verband's total allotments up to 10,392,000 tons of Steel. The estimated production of Pig Iron for the entire country this year is about 12,250,000 tons. From these figures it is apparent how nearly the Verband controls the entire Iron trade of Germany.

### Activity in Scrap and Ore.

Among the latest features of the market may be mentioned a greatly increased activity in Scrap and Old Iron. The demands of the rolling mills are increasing considerably. Recent sales of Old Rails and Steel Ties showed gains of 10 to 20 per cent, in prices since last spring. Fortunately the supply of Old Steel and Scrap with dealers is said to be quite large.

The business in Ores shows increased activity, the furnaces buying heavily for next year delivery at the higher prices recently fixed. In the Siegen District, the principal Ore region north of the Rhine, the association has sold its output for the first quarter of 1907 and furnaces that have not effected contracts will have difficulty in securing supplies. The prices of Ores have risen to such a degree that Ores of poorer quality are coming into use and the mines are trying to their utmost to increase their output. Imports of Ores in September underwent a notable increase, having amounted to 1,165,000 tons, as compared with 505,000 tons in August.

### The Pressure on Rolling Mills.

The rolling mills are, of course, running at their utmost capacity. The Rail mills still have large orders from the Prussian railroads, taken several years ago when the prices of materials were much lower than now; hence they complain that they are not making profits on this business in keeping with the general boom standard. Foreign orders are restricted somewhat through the fact that the mills have to ask for very long terms of delivery. The inquiry for Grooved Rails has much increased in volume. The Prussian railroads have recently given orders for large quantities of new rolling stock, causing a heavy demand for Wheels and Axles. The foreign market also shows much activity in these specialties. Business in Plates and Sheets has improved steadily for two months, especially in fine Sheets. The great companies have large orders for Boiler and Ship Plates. The demands for Rolled Wire or Wire Rods cannot be satisfied; the foreign requirements are unusually heavy, but they are only partly considered in view of the extraordinary consumption at home. In Drawn Wire there is plenty of work till well into the second quarter of next year. The orders for Wire Nails are considerably more voluminous since the organization in that branch was dissolved, and prices have about reached a satisfactory basis.

In view of the above state of things in the Iron trade it is not strange that the scarcity of Coal has become more acute. All departments of industry are making heavy demands for fuel, and it is quite impossible for the mines to meet the wants of their customers. For some months the Syndicate itself has been importing English Coal or liberating contracts with its consumers and directing them to buy in England. The movement of Coal just now is hampered by low water in the Rhine, as well as by the shortage of Coal cars.

The International Boring Company, whose chief work is to bore for new Coal deposits and dispose of them to operators, has declared the quite unheard of dividend of 500 per cent. The concern has just reported several valuable strikes, and during the past five years it has vastly increased the area of known Coal deposits in Westphalia and Lorraine.



## New York.

NEW YORK, October 24, 1906.

**Pig Iron.**—There has been considerable activity, both in Spot Iron and in Iron for forward delivery, and the market is higher. New England in particular is suffering from acute scarcity of Foundry Iron, not because the melters have not been covered, but because only a fraction of the Iron due them is being delivered. Spot No. 2 Foundry has sold in New England up to \$25. Virginia makers are asking \$21, at furnace, and Lehigh Valley furnaces \$23 for spot Iron. Middlesbrough No. 3 Foundry, in cargo lots, is offering at 70s. to 71s., c.i.f., while by liner 73 to 75 is quoted, freight by liners having gone up, with very little room available for some time to come. From Glasgow direct, on liners, there is no more room for some time, and shipments of Scotch Iron via Liverpool have begun. American foundrymen are, however, slow to change their mixtures, and many of them are exacting as to chemical specifications. We note a sale of 7000 tons of Malleable Iron to a Connecticut plant on the basis of \$20, at furnace. We quote nominally for spot Northern Foundry Iron \$23.50 to \$24 for No. 1, and \$23 to \$23.50 for No. 2. For 1907 delivery we quote \$23 to \$23.50 for No. 1 Foundry, and \$22 to \$23 for No. 2 Foundry. Southern Iron is sold at \$21.50 to \$22 for No. 2 Foundry, prompt delivery; \$20.50 to \$21 for No. 2 Foundry, first quarter delivery, and \$20 to \$20.50 for second quarter.

**Steel Rails.**—After a period of comparative quiet the Rail market has become quite active again. The Vanderbilt lines have practically duplicated their original order for 1907 by placing 85,000 tons, distributed among various mills. The Texas & Pacific has taken 30,000 tons, and the Northern Pacific's original order has been increased by 10,000 tons. Other orders of the week are 8000 tons for the Chicago, Lake Shore & South Bend, a traction line, which will run through Gary, Ind.; 4000 tons for the Cumberland Valley, and about 10,000 tons for traction lines in lots of 1000 and 1500 tons. Two Eastern roads are asking for round tonnages, which will probably come upon the books within a week or two. An export order, taken by the Buffalo mill, is 10,000 tons, as a minimum, and the total may reach 15,000 tons, for shipment to the Philippines. No business for 1906 has been accepted by the mills for some time, and it is certain that much will be carried over into 1907, in spite of the good rolling records of the leading mills.

**Structural Material.**—Miscellaneous business has been more active recently and the mills report orders coming from well distributed sources after a somewhat quieter interval. Contracting companies find the reverse of the situation of two months ago, when most of the work offered was small or moderate sized jobs. Large contracts are now the order. One that has been hanging fire for a long time, the 14,000-ton order for the City Investment Company's extensive building, covering an irregular ground space between Cortlandt and Liberty streets, west of Broadway, with about 50-ft frontage on the latter, was practically closed to-day. The American Bridge Company bids fair to make a fabricating record this month, having shipped 33,000 tons of work from its shops up to October 19. The company has received the first of the Gary rail mill order in the past week—3000 tons. Its bridge work just booked includes 800 tons for the Virginia & Southwestern, 500 tons for the Delaware & Hudson and 200 tons for the Philadelphia & Reading. The Northern Pacific is planning for 18,000 tons of bridges, of which a portion has been let, and the Rock Island is figuring on 4000 to 5000 tons. The South & Western road is expecting to build bridges amounting to 20,000 tons, and is now figuring on 9000 tons of this. More San Francisco work is coming out from time to time. While no advance in prices has been expected and all mills are taking contracts on the present level running to July 1, 1907, the fact that advances are being made in the raw and semifinished end of the trade is receiving more comment from the producers of Finished Material. We quote as follows on mill shipments, tidewater delivery: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. On Beams 18 to 24 in. and on Angles over 6 in. the extra is 0.10c. Beams and Channels out of stock are sold at 2½c. to 2½c.

**Bars.**—The strength of the market has not only been maintained, but the volume of business has increased. The production of the Eastern Bar Iron mills has not yet been expanded by the resumption of more of the mills having strikes, while one of the active mills has had its operations checked by a fire which will interrupt operations for some little time. Bar Iron is firmly maintained at a minimum of 1.65c., Pittsburgh, or 1.79½c., tidewater, with sales being made as high as 1.84½c. While the official quotation of Steel Bars makes the nominal price 1.64½c., tidewater, orders for reasonably early delivery command a sharp advance on this rate.

**Plates.**—Local consumers have been impressed by the strength of the market on raw materials and a number of them have recently placed contracts covering their require-

ments for a considerable period in the future. Quite a good tonnage has thus been booked. The Eastern mills are making record outputs at this time, being driven to their utmost capacity to fill orders. The most glowing anticipations are current regarding the future of this branch of trade, manufacturers feeling assured of good business for at least the first half of 1907. Quotations are firmly held as follows at tidewater on carload shipments: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Firebox Plates, 2.24½c. to 2.60c., according to specifications.

**Cast Iron Pipe.**—The market continues very strong, more and more orders being entered for next year's delivery at top notch prices. Some manufacturers report sales for delivery as far ahead as next June. It begins to look as if those who do not fall into the procession early will have trouble in getting the Pipe they need next year. Prices continue on the basis of \$32 per net ton at tidewater, for carload lots of 6-in., and it is now difficult to find a seller willing to shade this rate, even on a desirable order.

**Old Material.**—Heavy Cast Scrap and Stove Plate are in excellent demand and prices are a shade higher. Some quite large tonnages of Heavy Melting Steel Scrap have been sold the past week for delivery to a local Steel plant after January 1 and at prices much better than the ruling prices in the eastern Pennsylvania market for this class of material. It is confidently expected that local Steel plants will hereafter easily consume all the Heavy Melting Steel Scrap available within a radius of 50 miles of New York and thus cut off shipments to eastern Pennsylvania plants, which in the past have run up to a very large quantity. Wrought Pipe, Cast Borings and Wrought and Soft Steel Turnings are quite active, selling at outside figures. No. 1 Yard Wrought Scrap and No. 1 Railroad Wrought have of late been moving rather freely, but some of the principal buyers are now out of the market and are not willing to take additional stock except at about 50c. per ton less than a week or 10 days ago. As the quantity of city and Railroad Wrought Scrap to be placed on the market is small, it is believed that not much likelihood exists of the mills being able to buy at much lower than recent prices. With the approach of winter, it is generally conceded that all grades of Rolling Mill Scrap will command higher prices. Old Iron Car Axles and Old Iron Rails are in urgent demand, with but little tonnage to be had. Approximate prices for New York and vicinity per gross ton are as follows:

Old Iron Rails.....	\$24.50 to \$25.00
Relaying Rails.....	28.00 to 28.50
Old Steel Rails, rerolling lengths.....	18.50 to 19.00
Old Steel Rails, short pieces.....	16.25 to 16.75
Heavy Melting Steel Scrap.....	16.25 to 16.75
Standard Hammered Iron Car Axles.....	29.00 to 30.00
Old Steel Car Axles.....	22.00 to 22.50
No. 1 Railroad Wrought.....	21.00 to 21.50
Iron Track Scrap.....	18.00 to 18.50
No. 1 Yard Wrought, long.....	18.50 to 19.00
No. 1 Yard Wrought, short.....	18.00 to 18.50
Wrought Pipe.....	14.50 to 15.00
Light Iron.....	10.00 to 11.00
Cast Borings.....	10.00 to 11.00
Wrought Turnings.....	13.00 to 14.00
Old Car Wheels.....	19.75 to 20.00
No. 1 Machinery Cast.....	17.00 to 17.50
Stove Plate.....	13.50 to 14.00
Grate Bars.....	12.50 to 13.00
Malleable Cast.....	17.50 to 18.00

The L. K. Hirsch Company, dealer in Iron and Steel, with offices heretofore in the Produce Exchange, has removed to rooms 1405 and 1406 at 100 Broadway, New York City.

## Metal Market.

NEW YORK, October 24, 1906.

**Pig Tin.**—The London market reached £200 on Tuesday of this week, but declined sharply to-day to £198 for spot and futures. The situation as far as this country is concerned is very strong. Buyers are purchasing only for immediate shipment, and having stayed out of the market for six or eight weeks can have no considerable stocks on hand. Another item of strength, too, is the few orders that have been booked by importers for future delivery, and it seems as if consumers must shortly come into the market for large amounts. On Thursday sales were made at 43.05c., advancing on Friday to 43.10c. Monday an advance was made to 43.30c., and on Tuesday sales were effected at 43.65c. To-day the price is lower, at 43.25c. There seems to be a very optimistic feeling in London, and some operators there have expressed the belief that Tin would rule at £200 or above during the greater part of the coming year. While deliveries this month have been greater than during September the total outgo has been small. The arrivals so far this month aggregate 3080 tons, and there are afloat for American ports 2095 tons.

**Copper.**—Little business was transacted the past week, for the simple reason that but little metal could be had, and there were inquiries in the market which could not be filled owing to the scarcity of the supply. The larger producers

are unwilling to sell for delivery after February 1 and other producers seem disinclined to make any commitments after January 1, although there have been sales which aggregated a large tonnage for this period during the last month. Producers are extremely cautious and are not selling any refined metal against which they do not have the Ore above ground. Each individual transaction is made at a special price, which is governed by the urgency of requirements. This makes it difficult to quote the market, but for prompt shipments of Lake and Electrolytic probably 22½c. to 23¼c. would be demanded. January deliveries could undoubtedly be had at 22c. to 22¼c. Sales of Electrolytic for March delivery have been made at 21.50c. The sharp decline of the London Exchange on Thursday and Friday was due to the financial situation there. The shortage of supplies and intrinsic strength of the market are clearly shown in a recent statement that one of the largest Brass manufacturers has been compelled to withdraw the protection given to customers formerly of allowing blanket orders for delivery within 60 to 90 day periods at stated prices, and resorted to quoting prices for immediate acceptance and delivery only. Brass manufacturers are also eager buyers of Scrap. In spite of the hesitancy to sell for future deliveries it is stated that one producer has disposed of a large share of its February output and a fair portion of its March. The London market shows a sharp decline from last week and closes at £98 2s. 6d. for spot, £98 2s. 6d. for futures and £104 10s. for Best Selected. One of the features of the situation is the new Copper companies that are springing up, it being a poor locality indeed that cannot bring out a story of rich Copper deposits.

**Pig Lead.**—A few cars of Lead are being offered at 5.90c., New York, but the bulk of the metal is held at 5.95c. Sales have been made within the week, however, at 6c. In St. Louis the market is firm at 5.90c. to 5.95c. The American Smelting & Refining Company continues to sell only at the price ruling on date of shipment. The price governing old contracts is 5.75c.

**Spelter.**—The market is stronger, and sales have been made in this market at 6.30c. In St. Louis the price is firm at 6.20c. Zinc Ore is very scarce, and held at high figures.

**Antimony.**—The market is higher, due to a shortage of Ore, and also to advancing prices on the London exchange. Cookson's is held at 25.50c.; Hallett's at 25c., and other brands 24.25c. to 24.75c.

**Nickel.**—The price is unchanged at 45c. for large lots and 55c. to 60c. for smaller quantities.

**Ferroalloys.**—There appears to be a scarcity of Ferro-silicon, due undoubtedly to the closing down of works in France on account of lack of water power. Prompt shipments of 50 per cent. can be had at \$98 to \$102. We learn of sales of Ferromanganese at \$80, f.o.b. Pittsburgh. Ferrochrome is unchanged at \$150, basis.

**Tin Plate.**—American manufacturers of heavily coated Terne Plates have advanced prices, due to higher prices for Pig Tin. Bright Plates are unchanged at \$3.94, f.o.b. New York, and \$3.75, f.o.b. Pittsburgh, subject to the usual trade discount. The demand is very good, but deliveries are slow. In Swansea Welsh Plates are unchanged at 14s.

**Old Metals.**—A shortage of Composition is responsible for an advance of 1c. per lb. in Heavy Machinery Composition and Composition Turnings. The prices for Copper Scrap depend largely on consumers' needs. Dealers' selling prices are as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	20.50 to 21.50
Copper, Heavy and Wire.....	20.50 to 21.00
Copper, Light and Bottoms.....	19.00 to 20.00
Brass, Heavy.....	15.00 to 15.50
Brass, Light.....	12.50 to 13.00
Heavy Machine Composition.....	19.00 to 20.00
Clean Brass Turnings.....	13.75 to 14.25
Composition Turnings.....	17.00 to 18.00
Lead, Heavy.....	5.75
Tea Lead.....	5.50
Zinc Scrap.....	4.75

### Iron and Industrial Stocks.

NEW YORK, October 24, 1906.

The stock market was seriously disturbed the past week by the unexpected advance to 6 per cent. in the rate of discount by the Bank of England, which it was feared would not only stop the withdrawal of gold for export to this country, but also compel stocks to be sacrificed by Wall Street speculators who might be called upon to pay off loans which they had been carrying in the London market. The chill was felt most severely on Saturday, and its influence had not completely passed on Monday morning. The lowest quotations of the past week were made at those times. A rapid recovery took place on Monday after a number of reassuring incidents had occurred, among them being the promise of relief to the money market from the Treasury Department. The range of prices on active stocks during the week,

taking the lowest point touched on Saturday or Monday and the highest price realized in the period covered, is as follows: Car & Foundry common 42½ to 45½, preferred 100¼ to 102; Locomotive common, 71¼ to 76½; Colorado Fuel, 50¼ to 55½; Pressed Steel common 53½ to 58¼; preferred 98¼ to 99¼; Railway Spring common, 50½ to 53; Republic common 35¼ to 37; preferred 96 to 98½; Sloss-Sheffield common, 71¼ to 73¼; United States Cast Iron Pipe common, 47 to 48½; United States Steel common 46 to 49½; preferred 105¼ to 107½; American Can preferred, 55½ to 56¼. Last transactions on active stocks up to 1.30 p.m. to-day are reported as follows: Car & Foundry common 44½, preferred 101½; Locomotive common 75, preferred 112½; Steel Foundries common 10½, preferred 44; Colorado Fuel 52½; Pressed Steel common 56¼, preferred 99½; Railway Spring common 52½; Republic common 36¼; preferred 98; Sloss-Sheffield common 72½; Tennessee Coal 158½; United States Cast Iron Pipe common 47½, preferred 91; United States Steel common 46½, preferred 106; Can common 6½, preferred 55¼.

It is stated that the plan for the reorganization of the Susquehanna Iron & Steel Company, Columbia, Pa., has been accepted by a large majority of the stockholders. The courts will be asked by the receivers within a few days for an order of sale and the property will be advertised for the required time thereafter. The Susquehanna Iron Products Company, which is the name agreed upon for the new company, will bid in the property at the sale. However, should 80 per cent. of the stockholders assent meantime to the reorganization plan the public sale and its attendant expense can be avoided. The new company, with the \$750,000 realized from the preferred stock issue, is expected to be put on a basis that will permit of profitable operation.

**Dividends.**—The Bethlehem Steel Corporation has declared a quarterly dividend of three-quarters of 1 per cent. on the preferred stock.

The Pennsylvania Steel Company has declared a semi-annual dividend of 3½ per cent. on the preferred stock, payable November 1.

The Warwick Iron & Steel Company has declared a semi-annual dividend of 2 per cent., payable November 15.

**Large Steel Works Contracts.**—The Pennsylvania Engineering Works, New Castle, Pa., builder of blast furnaces and steel plant construction, general machine and plate work and iron and steel cars, has some very large contracts on its books and is running its extensive works to full capacity. Among contracts now being turned out are the following:—For the Standard Steel Company, Burnham, Pa., 1 built-up steel frame work for 14-ton hammer, weighing 110 tons, and 1 built-up steel plate frame work for 5-ton hammer, weighing 30 tons; Bethlehem Steel Company, South Bethlehem, Pa., one 250-ton metal mixer, 13 70-ton ladles and exhaust piping; Dominion Iron & Steel Company, Sydney, N. S., 2 15-ton Bessemer converters and steel building for them; Milliken Brothers, Incorporated, Mariner's Harbor, Staten Island, N. Y., steel stack and exhaust piping; Republic Iron & Steel Company, Sharpsville, Pa., blast furnace shell; New York State Steel Company, Buffalo, N. Y., 2 cupolas and 4 25-ton ladles; Cambria Steel Company, Johnstown, Pa., hot metal cars; Tennessee Coal, Iron & Railroad Company, Ensley, Ala., furnace shell and converters; Inland Steel Company, Indiana Harbor, Ind., ladles; Indiana Steel Company, Gary, Ind., 30 60-ton ladles and 30 hot metal cars; Imperial Steel Company of Japan, hot metal cars; Niagara Falls Hydraulic Power & Mfg. Company, Niagara Falls, N. Y., 6 penstocks 10-ft. in diameter, which on account of their size and location are expected to present some unique problems for erection into place; Carnegie Steel Company, Donora Works, 30-in. billet mill and tables.

The United States Indestructible Gasket Company, 67 South William Street, New York, has completed four of the largest seamless copper gaskets ever made. They are 8 ft. 4 in. in diameter and 1-16 in. thick. The gaskets were made to fill a private order and were recently delivered. It is claimed that the making of seamless gaskets of that size is an especially difficult job, but it was accomplished satisfactorily in every way. The company is making a specialty of turning out extra heavy gaskets in addition to gaskets of all shapes and descriptions.



### The Phoenix-Hoerde Merger.

On October 10 the stockholders of the Phoenix Company of Duisburg-Ruhrort, and the Hoerde Company of Hoerde, Germany, unanimously voted in favor of the merger of the two companies. The stockholders of the Hoerde Company exchange their shares for stock in the Phoenix Company, the latter issuing 26,940,000 marks of new stock, which would bring up the capital to 61,940,000 marks. The stockholders of the Phoenix Company voted to increase the capital stock to 72,000,000 marks. The advantages of the merger to the two companies lies chiefly in the fact that Hoerde has a surplus of steel while Phoenix does not have an adequate supply. The former makes the heavier lines of products, structural material, forgings, &c., while Phoenix produces on a large scale, wire, sheets, hoops and bars. During the last fiscal year Hoerde produced 496,565 tons of coal, 464,264 tons of smelted ore, 359,997 tons of basic Bessemer pig iron, 491,165 tons of steel ingots, and 407,551 tons of rolled and forged products, and employed 7963 men. Phoenix produced in the last fiscal year 679,548 tons of coal. Jointly with Gutehoffnung, Phoenix operates mines in the Minette District, which produced 428,672 tons of ore. The production of pig iron was 397,093 tons, that of steel ingots, 427,917 tons, and that of finished iron and steel, 423,862 tons. The company employed 12,766 men. Hoerde, in the fiscal year just closed, made a gross profit of 8,084,151 marks, and distributed 15 per cent. in dividends, aggregating 3,975,000 marks. Phoenix made 8,854,098 marks gross and declared a dividend of 5,250,000 marks or 15 per cent.

### The United Iron and Steel Company.

Negotiations have been practically concluded by which all the interests of the Cherry Valley Iron Company, Pittsburgh, will pass into the control of a new corporation, the United Iron & Steel Company, headed by A. W. Thompson, formerly president of the Republic Iron & Steel Company and now largely interested in the Inland Steel Company, Chicago. The Cherry Valley Company owns 200 coke ovens and a blast furnace at Leetonia, Ohio, with modern equipment, which is turning out about 350 tons of iron per day, also the Fannie Furnace at West Middlesex, Pa., which has recently been remodeled and is making about 300 tons of iron per day. The company is the owner of ore properties in the Mesaba region, having about 12,000,000 tons of ore in sight, of which about one-third is Bessemer; also 700 acres of coking coal lands in Fayette County, Pennsylvania, in the heart of the Connellsville coke region; also large shares in limestone properties and ore carrying interests. Application for a charter for the new company has been made, and the properties will be taken over about January 10. Joshua W. Rhodes, who has been president of the Cherry Valley Company since its inception, will be connected with the new corporation, but probably not in an official capacity, as the state of his health causes him to desire to be relieved of active business duties. Edwin N. Ohl, vice-president of the Cherry Valley Company, will be an officer of the new company.

### The Asbestocel Covering for Heating Systems.

Prominent among the many brands of pipe covering on the market for hot water, steam and hot air heating systems is the Asbestocel covering, manufactured by the H. W. Johns-Manville Company. This covering is not only an insulator of the highest efficiency, but it is also absolutely fireproof and meets the Fire Underwriters' requirements. It is made entirely of asbestos and is an improvement over the ordinary air cell coverings, because the corrugations run around the pipe instead of lengthwise, thus effectually preventing all circulation of air and consequent radiation of heat. This covering is also unusually strong and durable, owing to the fact that it is built on the well-known arch form of construction. Asbestocel coverings have been proved by actual tests to be capable of paying their initial cost in less than one year by the saving in coal consumption. They are made in sectional

form for pipes, in sheets and blocks for large heating surfaces and paper for hot air pipes. The company has recently issued an interesting folder giving the results of actual tests made on this covering.

### The American Shipbuilding Company.

The seventh annual report of the American Shipbuilding Company, for the fiscal year ending June 30, 1906, shows the year to have been the most successful since the organization of the company. This is attributed in part to the fact that the tonnage on the Great Lakes is increasing in size and also to the general prosperity of the country. The statement shows 30 vessels built in the year, with an average carrying capacity of 8700 tons on a 19-ft. draft. The 43 vessels which the company had under contract early in the present month will have an average carrying capacity of about 9200 tons each. The capital stock remains unchanged from last year at \$7,900,000 preferred and \$7,600,000 common issued, \$15,000,000 of each being authorized. The additions to plant made in the year cost \$487,552.22. The company carries \$500,000 reserve for maintenance and \$103,932.03 for fire insurance. The statement of earnings for the fiscal year and of surplus account is as follows:

Earnings .....	\$2,443,217.04
Less dividends, preferred.....	\$553,000.00
Depreciation and maintenance.....	421,285.61
Rebuilding docks, &c.....	85,559.07
Reserve for maintenance.....	300,000.00
	<u>1,359,844.68</u>
	\$1,083,372.36
Balance, June 30, 1905.....	\$4,318,792.65
Less common dividend, 4 per cent....	304,000.00
	<u>4,014,792.65</u>
Working capital, June 30, 1906.....	\$5,098,165.01

President James C. Wallace says in his report that in view of the conditions on the Great Lakes having changed in the past two or three years, especially in the annually increasing tonnage, it has been deemed advisable to provide for larger dry docks. The new dry dock and other improvements started last year at Lorain, Ohio, will be in operation by December 1, 1906. At the Detroit Shipbuilding Company's plant, Detroit, Mich., additional real estate has been purchased to put in a dry dock 700 ft. long and 125 ft. wide. Real estate has been purchased at Cleveland also, adjoining the old river bed property of the company, to put in a dry dock of the same size.

### Carnegie Extensions at Duquesne.

Definite plans have been made by the Carnegie Steel Company for the large extensions it is to make to its Duquesne Works, for which the Finance Committee of the United States Steel Corporation has granted an appropriation of more than \$9,000,000. These extensions include the building of two blast furnaces, 22 x 90 ft., each to have a monthly capacity of 14,500 tons. Six blowing engines will be installed for these furnaces, four of which will be gas and two steam. Eighteen 60-ton basic open hearth steel furnaces will also be built, of which six will be extensions to the present open hearth plant, while the other 12 will be located on the site now partially occupied by the Bessemer steel plant, which will be abandoned. There will also be built one 16-in. bar mill and the present 10-in. mill at the Monessen Works will be removed to Duquesne. These extensions will carry with them additional general plant equipment, which will include the building of three four-hole soaking pits and an electrical power plant consisting of three 2000-kw. generators, two of which will be gas driven and one steam. It will be noted that when these extensions to the Duquesne Works have been completed the output of the plant will be open hearth steel exclusively.

The American Steel Foundries and a number of the smaller foundries at Sharon and Wheatland, Pa., have effected a compromise with their molders, giving them an advance of 20 cents per day, thereby settling the strike which has been on for some time in that district.

## The Machinery Trade.

NEW YORK, October 24, 1906.

So great is the demand for machinery and so little of it is to be had on reasonable delivery that in many cases inquiries by mail are giving way to personal visits by purchasing agents and others desiring machinery in an endeavor to pick up a few tools here and there. This has been going on for some time, but is becoming more common daily, and a new expression, "trying to buy machinery," is now attributed to a visitor to the trade who on other occasions was said to have come into the street to buy machinery. This new phrase undoubtedly expresses the situation exactly where delivery within a few months is required. In addition to the inability to secure machine tools, it is getting difficult to see a sample of a standard make, so sadly depleted have stocks on dealers' floors become. Orders are coming in in such volume that machines for stock ordered months ago are sold before they are shipped from the factory. In the past few days there has been a great deal of buying in this territory, large orders having been placed for milling machines. Some substantial inquiries were also received, including a good sized railroad list of tools and one from a foundry company.

Scattered inquiries coming from the Philippines indicate that this country has a growing business with those islands and American manufacturers seem to be on the ground floor, judging from the orders which have been placed here of late by native and American engineering firms operating there. The leading engineering interest now doing a large construction business in the Philippines has been placing a large number of orders of late, especially for out door machinery intended for construction work, but in addition to that many American engineers who have located on the island are sending orders here for heavy power equipment and in some cases for sugar mill machinery. The fact that American engineering interests are so strongly entrenched on the island is a factor in influencing the trade toward this country, and from all accounts the question of delivery is not affecting the trade, as the principal European manufacturers are now so busy that they can give but little better terms.

The experience of a large exporter of American machine tools who had an exhibit at the exposition at Milan, Italy, is interesting as an indication of how well American machine tools sell when advertised. It is declared that as a result of the display made by the manufacturer in question enough orders were received during the convention to more than pay the expense incident to arranging and maintaining the exhibition. It is said that other American manufacturers who had independent exhibits did equally well and, of course, the business that will follow as a result of the exhibition cannot be reckoned now. The immediate returns, however, in most cases, were such as to prove that investments in such exhibitions pay, and it is especially true with American machine tools which generally find favor in the foreign market when given a proper introduction. It is understood that a number of the machine tools shown at the convention were not shipped back to the exporter, they having been purchased by parties in Italy in the early days of the exhibition.

### Erie Railroad's Machine Tool List.

The most important development in the machinery trade this week was the receipt of specifications for a good sized lot of machine tool equipment for the Erie Railroad. The list is understood to cover quite a number of machine tools required for delivery at Susquehanna and Meadville, Pa. It is not thought that the requirements for Susquehanna are all provided for in the list, however, as it is the company's intention to spend in the neighborhood of \$1,000,000 for improvements at that place, and probably later on the trade will hear of further machinery needs. Preparations for adding to the Susquehanna shops have been going on for some time, and a tract of land between the company's tracks and the Susquehanna River has been filled in, and a concrete retaining wall, 446 ft. long, 10 ft. wide at the base, 2½ ft. wide at the top, has been built along the river edge. The company has filled in some 4000 ft. of land, at an average depth of 27 ft. to prepare for the improvements, which will include a 29-stall roundhouse, a coal handling plant, 240 ft. long, and an ash handling plant of the same length, there will be a power house, the size of which has not yet been announced, but it will contain, among other apparatus, two 400-hp. Babcock & Wilcox boilers. There will be a 50-gal. water tank and a machine shop, 48 x 180 ft. It is understood that there will be other buildings, but these have not been entirely arranged for as yet. All of the structures are to be built on reinforced concrete piles, and to be of modern construction.

It is the intention of the Florence & Cripple Creek Rail-

road to rebuild its machine shop at Canon City, Colo., which was recently destroyed by fire. The new building will be 60 x 125 ft., of steel construction. Only a portion of the machinery was destroyed, and in addition to the necessary parts for the damaged machinery the company will be in the market for one turret lathe, one engine lathe, one 35-in. blower, one 22-in. shaper, one 40-in. drill press, one emery wheel stand, one 36 in. by 9 ft. planer, one valve facer, two air motors, 1500 ft. of double-ply leather belting, various widths; 110 ft. 2 15-16 in. cold rolled shafting with couplings and pulleys, ten 22-in. drop hangers, and nearly a complete equipment of dies, taps, reams, drills and tools. Three narrow gauge engines were in the shop at the time of the fire undergoing repairs on which the loss will be about \$3000. A good part of the supplies necessary to equip these engines will be purchased. A. L. Boyd is purchasing agent.

A railroad is to be constructed from Ithaca to Owego, N. Y., a distance of 34 miles, for the Ithaca & Owego Traction Company, which recently secured a franchise. The question of power has not been settled as yet, and it is thought that the company may adopt gasoline motors for its cars, but if this plan is not followed out it is probable that a trolley system will be built. L. W. Serrell, 29 Broadway, New York, is the consulting engineer.

The railroads have made some purchases the past week, including the Pennsylvania and Atlantic Coast Line railroads, both of which placed orders for good sized compressors with the Chicago Pneumatic Tool Company, New York. The order placed by the Atlantic Coast Line is probably the beginning of the closing out of its list, which has been before the trade for the past few weeks.

### Some Industrial Machinery Requirements.

A small set of specifications for machinery for equipping its new plant at Huntington, W. Va., has been issued by the Globe Foundry Company, Port Chester, N. Y. The list covers one 18 to 20 ton cupola, pipe and fitting mills, 8 x 8 x 90 ft. steam driven air compressor, air hoist, air tank, positive pressure blower, 50 to 60 cu. ft. per rev., tapping machines for 3-in. pipe, upright drill 1-in. hole; upright drill, ¼-in. hole; 24-in. lathe with 8-ft. bed, all modern improvements; 26-in x 8-ft. planer; 24-in. hollow spindle pattern maker's lathe, with 12-ft. bed; universal saw bench for one 14-in. rip and cross cut saw, and a quantity of other supplies. The company has in course of erection a foundry, 150 x 400 ft., which with the equipment will cost between \$75,000 and \$100,000. The plant will be equipped for the manufacture of soil pipe and fittings, steam and hot water boilers and cast iron radiation.

The Independent Steel & Wire Company, with offices in the House Building, Pittsburgh, is sending out inquiries to engineering companies asking for bids on an open hearth steel plant to contain three 50-ton furnaces, also on steel buildings, cranes and other equipment. No bids are asked for gas producers, and it is understood that the new plant if built will be located in a natural gas belt. It is understood that the Independent Steel & Wire Company is selling the product of several independent wire companies.

But few machine tools will be required by the American-La France Fire Engine Company, Elmira, N. Y., for its consolidated plant in that city, as the machinery equipment in its plants at Seneca Falls, N. Y., and Cincinnati, Ohio, is to be transferred to the plant at Elmira. The company is in the market for two 230-hp. safety water tube boilers, one 200-kw. generating unit, in addition to electric cranes, electric elevators, &c. Extensive improvements are being made to the plant, including the erection of a building 65 x 532 ft., which is to be used for an erecting shop, woodworking department, boiler room, testing room and storage; a two-story blacksmith shop, 50 x 90 ft., together with a brass foundry and other smaller buildings. When the company's manufacturing has all been concentrated at Elmira it will be the largest fire engine and engine apparatus establishment in the United States.

The X L Machine & Electric Company, recently incorporated, has succeeded the Electric Mechanical Company, 132 Prince street, New York, and will enlarge its plant. The company is in the market for engine lathes, shaper and upright drills. W. A. Seva is president; S. F. Forman, vice-president; A. V. Schrade, secretary and treasurer.

A number of machine tools, a heating plant, lockers, &c., are required by the Hettinger Engine Company, Bridgeton, N. J., for equipping its new plant, which will be one story high, 75 x 100 ft. Work has been started on the construction of the plant, which will be devoted to the manufacture of gas and gasoline engines.

It will be some time before the Standard Roller Bearing Company of Philadelphia, Pa., will know what machinery it will have to purchase to equip the recently acquired Pennsylvania Iron Works, as it will not secure possession of all of the factory buildings for some time. The company will take immediate possession of the foundry, 100 x 200 ft., and will install the best equipment that can be secured for making crucible steel, brass and gray iron castings. Possession has also been secured of one factory building, three stories high, 50 x 150 ft., to which the erection of an addi-



tion, 50 x 250 ft., has been started. This building will be equipped with special ball making machinery which the company is to manufacture itself, as well as drills, lathes, milling machines, &c. The reinforced concrete building is now nearly finished, and the company is equipping it with a large amount of machinery.

Details of the machinery equipment for the new plant of the Kennedy Valve Mfg. Company, now under way at Elmira, N. Y., are being worked out, and among other things it has been arranged to equip the iron foundry and machine shop each with 20-ton electric traveling cranes with auxiliary hoists, in addition to some smaller cranes. The power house equipment will consist of one unit composed of a battery of boilers of 500 hp. and three high speed engines directly connected to generators. There will be a double system of feed pumps which will have three sources of water supply and duplicate fire pumps, each of 100 gal. per min. capacity. There will be one 500-hp. power feed water heater taking exhaust steam from the engines and pumps. The system will also include economizers and a heating system which either heats by a surplus exhaust or live steam taken from the main head through a reducing valve. All the machinery throughout the plant will be motor driven, the motors varying in size from 50 hp. down to 3½ hp., and all controlled through a central switchboard located in the power house. An auxiliary of the power house is a 100-cu. ft. air compressor connected with all the shops of the system.

From inquiries now in the market it is judged that the United States Steel Corporation has not as yet purchased all of its equipment for its cement plants, for which a large amount of machinery has already been bought. It is understood that there is still considerable to be bought for the new plant to be erected near Pittsburgh.

During the past few days the American Tobacco Company, New York, has been buying quite a little machinery through the Amsterdam Supply Company, New York. This machinery is not required for the new plant out West, as the specifications for the equipment of the \$1,000,000 plant to be erected in Chicago have not yet been prepared.

The S. S. McClure Company, which some time ago took out a permit for the erection of a building on Orchard street, Long Island City, for a printing plant, has now begun the erection of the factory which will be 100 x 255 ft. and four stories in height. The McClure Company, which has offices at 44 East Twenty-third street, New York, is having its own engineers look after the machinery details.

The Case Mfg. Company, through its New York office at 85 Liberty street, has sold to E. D. Jones & Sons' Company, Pittsfield, Mass., a 20-ton, 40-ft. span, 4-motor electric traveling crane with a 5-ton auxiliary hoist. The E. D. Jones & Sons' Company, which manufactures paper making machinery and turbine water wheels, is getting equipment. It is understood, for an addition now being made to its foundry.

The scheme to tunnel the Delaware River and establish a railroad between Philadelphia and Camden has been taken up by a new company which has been incorporated as the Delaware Subway Company. Some time ago the Intercity Link Railroad Company was formed to construct this tunnel, at the head of which were Wolf Brothers & Co. of Philadelphia, who are said to be financing the new project.

Bids will be received on Wednesday, November 7, by the Department of Water Supply, Gas and Electricity, New York, at its offices in the Park Row Building, for remodeling the Ridgewood pumping station on the north side of Atlantic avenue between Logan and Chestnut streets in the Borough of Brooklyn. The same department will receive on October 31 bids for furnishing two boilers and one economizer at the new Gravesend pumping station. The surety required will be \$6000, and separate contracts will be awarded for each piece of apparatus.

#### Business Changes.

Franklin Williams, who for several years has been the Eastern representative of the William Powell Company, has recently resigned his position to devote more time to the manufacture and sale of Tuxedo bronze unions and several other high pressure steam specialties he is placing on the market.

The Jeffrey Mfg. Company, Columbus, Ohio, has established a new Canadian branch office in Montreal, Canada, at Lagachetiere and Cote streets.

### Cincinnati Machinery Market.

CINCINNATI, October 23, 1906.

A prominent lathe builder states that business is already being taken for delivery as late as 1908, with nothing earlier than from six to eight months. The foreign demand continues strong, although possibly a shade lighter than it was some months since. However, some points in Continental Europe have shown a decided increase of late.

In speaking of the business situation one of the best informed iron and steel men of Columbus, Ohio, says: "The

place to watch the trend of the iron and steel market is in the offices of the engineers who prepare specifications for new work. Three years ago, before the slump in trade, the engineers' offices were found practically deserted. They had no plans on the boards at all. I have just returned from a trip to some of the principal cities of the country where I visited the engineers' offices and found every one of them busy on new work. Plans and specifications are being prepared for work which cannot possibly be delivered for months and this makes me confident of the future. When the engineers begin to see slack time then look out for a slump five or six months later in the iron and steel business."

The increase in the capital stock of the Steel Foundry Company, Cincinnati, will be used in the erection of additional buildings to accommodate the business of the plant, which is growing rapidly. Some new machinery will be added at an early date, as it is the intention of the promoters to largely increase the output of the plant.

The Stewart Iron Works Company, Covington, Ky., is building a steel and brick two-story addition to its plant, 96 x 223 ft. It is expected that the new building will be ready for occupancy by the first of the year, at which time considerable new equipment will be required.

The Ralston Steel Car Company, Columbus, Ohio, is reported to have closed a contract with the Hocking Valley Railroad Company whereby it will repair and fit with its patent center steel car sill about 50 cars per month.

The Buckeye Steel Castings Company, Columbus, Ohio, which is already one of the greatest of that city's manufacturing plants, is about to be largely increased. The directors at a recent meeting decided to extend the main building 100 ft. and one of the other buildings 150 ft. These extensions will be equipped with heavy cranes and be utilized for the assembling and storing of couplers and other heavy castings.

### New England Machinery Market.

WORCESTER, MASS., October 23, 1906.

Additional notifications of advances in machine tool prices have reached the dealers the past week together with requests for the return of lists that they may be amended. Notable among the changes are advances in the price of drills, including some of the sensitive drills, and where their builders manufacture other machine tools they are included in the change.

Customers are still buying freely, regardless of deliveries. It is apparent that practically every one has accepted the opinion that the present demand for all lines of metal goods will continue for at least another year. Those who have been holding back in their manufacturing enlargements, fearing that the present day conditions might be only temporary, have apparently abandoned their position to join with the majority. The pessimist among manufacturers is becoming exceedingly rare.

The Bertelsen & Petersen Company, East Boston, Mass., which does a general engineering business, including marine work, has prepared plans for two large buildings for manufacturing purposes. A machine shop will be 67 x 120 ft., three stories, of brick and steel. It will require a 10-ton electric traveling crane. The other building will be used as a boiler shop, and will be of corrugated iron and steel, 60 x 200 ft., one story. It will be equipped with an electric traveling crane of at least 15 tons capacity. Contracts for the cranes have not been let. W. O. Webber, mechanical engineer, Exchange Building, Boston, is in charge of the plans.

The L. Hardy Company, Worcester, manufacturer of machine knives, is to erect a new building, 40 x 80 ft., one story. It will be divided between a forge shop and machine shop. The company is not yet prepared to state what new equipment will be required beyond the probability that one or two drop hammers will be purchased later on.

The Reed & Prince Mfg. Company, Worcester, Mass., manufacturer of machine and wood screws and kindred products, is to erect a new forge shop. The building will be 50 x 70 ft., one story. The company does not yet know what will be purchased in the way of equipment, but probably another steam hammer will be needed. The present forge shop is not adequate for its purposes. The company builds much of its own machinery used in the manufacture of its products, and a considerable amount of forgings is required for that purpose alone.

The Portsmouth Navy Yard is buying a large number of machine tools for its steam engineering department with the \$50,000 appropriation made for the purpose. Some of the machinery has been advertised for, but a considerable portion of it remains to be announced to the market.

The Providence Engineering Works, builders of engines, Providence, R. I., is building a small addition to its engine room in which will be installed a 50-hp. suction gas engine and producer plant of its own design, the purpose being to give the unit a complete testing out in practical use in the company's works.

The D. E. Whiton Machine Company, New London,

Conn., is adding to its capacity by erecting a second story over the engine room, providing a space 30 x 60 ft. A 5-ton crane is to be installed in the foundry. Additional capacity will result from these improvements but the company states that it will not be in the market for anything important in the way of new equipment at the present time.

The Baker Machine Corporation, New Bedford, Mass., is putting on the market a turret attachment designed for use in an ordinary engine lathe or speed lathe, and especially designed for use in shops where there is not enough turret work to warrant the purchase of a machine built especially for the purpose, or where one turret machine is in use with more than enough work for it to do. The shank of the turret head sets in the tailstock. The revolving head is set at an angle which permits the use of any length of drill or reamer without interference with the action of the lathe. The head holds the standard turret tools. It is furnished in two sizes, No. 1 for engine lathes up to 18-in. swing and No. 2 for speed lathes.

The Putnam Machine Company, Fitchburg, Mass., builder of machine tools, is erecting an addition to its works, 21 x 52 ft., one story.

The plans of the Boston & Maine Railroad for improvements to its yard at Fitchburg, Mass., do not include the use of the property, which it owns, now occupied by the Fitchburg Machine Works, builder of the Low swing lathe. The company will remain in its present quarters without interference.

The American Steel & Wire Company is putting on the market a line of multiple spindle drills for use in connection with its rail bond business, and also a line of hydraulic punches and compressors for use on the tram of girder rails.

Charlestown, N. H., is preparing plans for a municipal electric lighting plant.

An important sale of water power has taken place the past week, the rights of the Falls Village Water Power Company on the Housatonic River at Falls Village in the northwestern part of Connecticut having been acquired by a corporation known as the Connecticut Power Company, New Haven. The company is not yet ready to reveal the use to which the property will be put, but it is understood that it will be developed for electric power, and it is rumored that the New York, New Haven & Hartford Railroad will ultimately be the owner, using the power in connection with its extensive system of electric railroads. The power is a large one, being one of the most important on the Housatonic River.

The engineers in charge of the new boiler shop which it is proposed to build at the Portsmouth Navy Yard are planning what promises to be one of the finest and best equipped works of its kind in the country. Only the foundations have been completed and additional appropriations will be needed before the building can be erected and its equipment purchased, but as the shop is badly needed in connection with the great new dry dock it is expected that the Navy Department will be able to secure the necessary funds from Congress. The boiler shop will be located near the dry dock. A spur track into the building will be constructed from the 12-ft. gauge railroad of the big traveling crane which serves all points of the dock. Specially constructed cars will take a boiler lifted from a ship by the crane and deposited upon a cradle on the car body. This cradle is designed to handle the work during the processes of repair. The car will enter the shop with its freight and carry it to the machines to be used in the repair work. The shop equipment will include a very complete crane service. There will be two 50-ton cranes, two of 15 tons and one of 25 tons, the last running in front of the riveting tower, which it is stated will be the best in the country in its arrangement and equipment. The boiler shop will require a large number of machine tools.

The New York Central Railroad has announced that it will permanently close its repair shops at Allston, Mass., where the machinists have gone on strike because of the refusal of the company to abolish a piece work system and advance wages. The company states that hereafter it will do all repair work at its shops at Springfield, Mass., and Rensselaer, N. Y.

The Camden Anchor-Rockland Machine Company, Rockland, Maine, manufacturer of gasoline engines, launches and anchors, is to move its works from Rockland to Camden, Maine, where a new building is being erected for the machine shop and office. Next year it is the plan to move the company's foundry to Camden. A large amount of the new equipment which will be required has been contracted for.

The Hathaway Recording Scale Company, Boston, is to establish a factory at West Bridgewater, Mass., for the manufacture of a new weighing device. It is a new corporation with authorized capital stock of \$75,000, and these officers: President, Hosea Hathaway; treasurer, Josiah S. Hathaway, 14 Charlesgate street, Boston; clerk, S. A. Chapman.

The Stanley-G. I. Electric Mfg. Company, Pittsfield, Mass., has broken ground for a new building, 80 x 112 ft., one story.

It is stated that the erection of the new machine shop for the Coe Brass Mfg. Company, Torrington, Conn., will be

deferred until spring. The foundations are in, but the concrete walls will not be attempted this fall.

The Benedict & Burham Mfg. Company, Waterbury, Conn., manufacturer of brass goods, has purchased a considerable tract of land on the Naugatuck River, which will permit of further expansion of the plant.

The Fall Mountain Electric Light Company, Bellows Falls, Vt., has purchased a power privilege with power plant on the Williams River and will develop the property for electric power.

The Matthews Mfg. Company, Worcester, Mass., manufacturer of metal goods, is to erect a brick addition to its plant, 38 x 53 ft. and three stories. Much of the new space will be devoted to manufacturing.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., October 23, 1906.

The volume of business transacted in the local machinery market the past week compares favorably with that of the preceding one, and was generally satisfactory to both manufacturers and merchants. As has been the case for several months, the major portion of the business placed was made up of orders for single tools or for a few tools for minor extension. The market appears to be bare of large propositions. In fact, it is quite probable that specifications which in some instances would aggregate fair lots of tools are being broken up into single inquiries and more generally distributed, in the hope that the prospective purchaser might be able to pick up here or there a tool or so on better delivery than could be had if the business was placed in a single lot.

Stocks on dealers' floors do not appear as heavy as was the case some time ago. In most instances dealers anticipated the scarcity of tools and placed stock orders with manufacturers for their various lines, which as they came in aided in supplying tools of some sizes and grades pretty promptly; but the immediate supply of desirable tools is now pretty well exhausted. Occasionally, when the case is urgent, dealers will let a tool go from their display floor, but with the uncertainty as to when such tools can be replaced it is not considered good policy.

The export demand has not been so active the past week. Some little business has been done in special tools, but the amount has not been large. Inquiries for standard machine tools for the foreign trade do not receive much consideration in this territory, owing to the inability to furnish such tools except on long time delivery.

The demand for boilers and engines has improved to some extent, but is still not as active as manufacturers and dealers would like. Some heavy power installation are under consideration, but are rather slow in closing. There is a better demand for equipment of the medium horse powers, both new and second hand, but that for the smaller powers has not been very active, owing probably to the increased number of gas and gasoline engines entering this field. Second-hand machine tools continue in strong demand. In some lines and sizes there is practically a scarcity, dealers being unable to supply the tools for prompt shipment.

Plans for the elevation of the Philadelphia & Reading Railway tracks in this city have been practically concluded. The necessary approval of Councils now having been obtained, it is thought no further delays will be encountered.

The Department of Supplies, City of Philadelphia, is asking for proposals for furnishing supplies of various kinds for the year 1907, among which are to be noted the following: Class H, hardware and tools; class I, iron and steel; class J, bolts, nuts, washers, rivets and screws; class S, cast iron water pipe and pipe castings; class V, iron, brass, steel and malleable iron castings; class X, brass fittings, cocks and valves, &c. Bids will be received until November 1, at 10 a.m. Specifications and samples are to be had at the office of the Director of Supplies, City Hall.

Department of Public Works, Bureau of Filtration, City of Philadelphia, is inviting proposals for the general repairs to a 10,000,000-gal. Wetherill cross compound Corliss internal plunger pump, located at the Frankford Pumping Station, Delaware avenue and Robbins street, in that city. Specifications may be obtained from the Bureau of Filtration, City Hall, and bids will be received until noon, October 30.

Bids are also being asked by this department for the completion of the Belmont filtration plant, according to specifications, under what is known as contract No. 39, and includes the building of filters for treating 40,000,000 gal. of water per day of 24 hr., also the erection of filter houses and other appurtenances. Plans and specifications may be had from the Bureau of Filtration, City Hall, and bids will be received until noon, November 7.

Plans are being made for the building of a new electric railroad, to be known as the Philadelphia & Garrettsford Street Railway, connecting this city with Media, Pa. The



new road is understood to be controlled by the Philadelphia & West Chester Traction Company and will have its eastern terminus at Sixty-third and Market streets, where it will connect with the Philadelphia Traction Company.

The Wm. Cramp & Sons Ship & Engine Building Company will make several additions to its foundry on Richmond street, below Cumberland. These include a building 42 ft. 6 in. by 73 ft., 50 ft. high, with a lean-to 42 x 46 ft., 22 ft. high, at the south end, and one 73 x 96 ft., 50 ft. high, with a 46 x 130 ft. lean-to, 22 ft. high, at the north end. The buildings are to be of steel frame, brick and corrugated iron. A 50-ton electric crane and two new core ovens, for which orders have already been placed, will also be installed. These additions and facilities will enable the company to increase its output in this department 25 per cent.

Liveright Brothers, file manufacturers, Twentieth and Allegheny avenue, are adding considerable new equipment to their plant. Machine tools for installation in a new tool room have already been purchased and they are in the market for additional file cutting and file finishing machines, which when installed will double their present capacity.

The Tindel-Morris Company, Eddystone, Pa., maker of the Tindel-Albrecht crank shaft lathes, has received an order from the Union Pacific Railroad Company for one of the largest sizes of these machines, it being 32-in. and having a capacity for multiple throw crank shafts ranging from 11-in. stroke for the smallest to 16-in. stroke for the largest. In single throw crank shafts the maximum size handled by this lathe is 23-in. stroke. This machine weighs complete about 15 tons, is fitted with electric drive and controllers and is intended for roughing out and finishing crank shafts of various kinds at the new plant of the Union Pacific Railroad at Omaha, Neb., for the manufacture of motors for gasoline cars for suburban traffic.

The High Duty Saw & Tool Company, Eddystone, Pa., has booked an order for a large double rotary slotting and sawing machine for slotting out crank shafts and for open end work on connecting rods at the new gasoline engine plant of the Union Pacific Railroad. The machine will have a capacity of two simultaneous slots of a width of 10 in. to a depth of 12 in. It will be equipped with two 36-in. diameter Tindel high duty inserted tooth saw blades of the same type as furnished the American Locomotive Company for similar work. This machine is electrically driven and is equipped with specially designed stands and tables for handling multiple throw crank shafts. A specially designed, motor driven grinder accompanies this machine for grinding the saw blades, a feature of which is the direct attachment of the motor to the grinding wheel without intermediate gearing.

The Energy Elevator Company is extremely busy in every department. The demand for all classes of elevators has been very large, both from local and out of town sources. Hand power freight lifts have been in greater demand, recent sales of elevators of this type including two large ones for export to Brussels, Belgium.

## Government Purchases.

WASHINGTON, D. C., October 23, 1906.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until November 13 for motors and other supplies for the Eastern navy yards.

The Department of the Interior, Washington, D. C., will receive bids until November 23 for an electric lighting plant at the Green Bay School, Wisconsin.

The following bids were opened October 13 for coaling plants for Charleston and Norfolk navy yards:

### Charleston.

Lumsden & Van Stone Company, Boston, Mass., item 1, \$142,000, Heine boilers, Foster superheaters, Roney stokers, Worthington condensers; 2, \$127,000; 3, \$137,000; 4, \$128,000; 5, \$141,000; 6, \$141,000; 7, \$136,000; 8, \$140,000; 9, \$130,000; 10, \$137,000.

C. L. de Mural, New York, item 1, \$108,000, Atlas boilers, Foster superheaters, Roney stokers, Wheeler condensers; 3, add \$1000 if Heine boilers are used; deduct \$500 if Murphy stokers are used; deduct \$1500 if Wheeler wet system of condensing apparatus is used; 5, \$102,000; 6, \$93,000; 7, \$84,000.

E. Rutzler Company, New York, item 1, \$124,953, Heine boilers, Foster superheaters, Roney stokers, Worthington condensers; \$115,075, Heine boilers, Wheeler condensers; 2, \$119,592; 3a, \$126,510, same as item 1, except Atlas boilers; 3b, \$114,814, same as 3a except Wheeler condensers, link belt coal conveyors; 3c, \$124,075, same as item 1 except Murphy furnaces; 3d, \$126,985, same as item 3a except Sturtevant economizers; 3e, \$125,474, same as item 1 except Sturtevant economizers; 3f, \$124,534, same as item 3c except Sturtevant economizer; 3j, \$124,068, same as 3e except variation in Worthington condensers; 3k, \$123,117, same as 3f except variation in Worthington condensers; 3l, \$112,856, same as 3g except variation in Worthington condensers; 3m, \$124,516, same as 3h except variation in Worthington

condensers; 4a, \$125,527, same as item 1 using Atlas boilers; 4b, \$111,283, same as item 4a using Wheeler condensers, link belt coal conveyors; 4c, \$118,395, same as item 1 using Murphy furnaces; 4d, \$125,975, same as item 4a using Sturtevant economizer; 4e, \$119,794, same as item 1 using Sturtevant economizer; 4f, \$118,844, same as item 4c using Sturtevant economizer; 4g, \$111,731, same as 4b using Sturtevant economizer; 4h, \$120,242, same as 4e using Sturtevant economizer; 5, \$116,235; \$107,127, using Wheeler condensers; 6, \$103,377; 7, \$94,551; 8, \$111,433; 9, \$98,143; 10, \$89,794.

Hoshor-Platt Company, New York, \$11,890, coal handling apparatus; \$11,170, alternative.

The Exeter Machine Works, New York, \$15,900, coal handling apparatus.

The Jeffrey Mfg. Company, Columbus, Ohio, \$19,243.96, coal handling apparatus.

Evans, Almirall & Co., New York, item 1, \$114,387, B. & W. boilers and superheaters, Roney stokers, Worthington condensers; 2, \$110,745; 3, \$113,197; 4, \$110,235; 5, \$107,297; 6, \$99,787; 7, \$92,697; 8, \$97,695; 9, \$96,140; 10, \$83,090.

The Link-Belt Company, Nicetown, Philadelphia, Pa., \$13,915, coal handling apparatus.

A. D. Granger Company, New York, item 1, \$131,119.

### Norfolk.

Mosher Water Tube Boiler Company, New York, item 3, \$57,000, Mosher boilers, Roney stokers, mechanical draft.

James D. Brooks, Washington, D. C., item 4, \$61,500, Atlas boilers, Roney stokers, Foster superheaters; 6, \$61,300, reinforced steel concrete chimney; 9, \$26,437, Wheeler condensers; 12, \$4500.

C. L. de Mural, New York, item 1, \$90,750, wet vacuum system, mechanical draft; \$88,300, wet vacuum system, stack; 2, \$93,650, dry vacuum system, mechanical draft; \$91,200, dry vacuum system, stack; 4, \$61,750, Atlas boilers, Foster superheaters, Roney stokers; 6, \$59,000, Atlas boilers, Foster superheaters, Roney stokers, concrete steel stack; 9, \$27,000, Wheeler condensers; 10, \$29,000, Wheeler condensers; 12, \$4300, Niles-Bement-Pond Company cranes; 13, deduct \$200 from items 4 and 6 if Murphy stokers are used; add \$1000 to items 4 and 6 if Heine boilers are used.

Babcock & Wilcox Company, New York, item 3, \$63,195, Babcock & Wilcox boilers and superheaters, Roney stokers; \$59,292, Stirling boilers and superheaters, Roney stokers; 5, \$63,727, B. & W. boilers and superheaters, Roney stokers, steel stack; \$62,792, B. & W. boilers and superheaters, Roney stokers, concrete stack; \$59,976, Stirling boilers and superheaters, Roney stokers, steel stack; \$59,045, Stirling boilers and superheaters, Roney stokers, concrete stack; deduct \$886 if Ross stokers are used; add \$2163 if Foster superheaters are used in place of B. & W.; add \$1770 if Foster superheaters are used instead of Stirling.

Edgemoor Iron Company, Wilmington, Del., item 3, \$57,800, Edgemoor boilers, Foster superheaters, Wetzel stokers; 5, \$58,050, concrete steel stack; add \$950 to item 5 if concrete foundations are required; add \$500 to items 3 or 5 if Roney stokers are used; add \$2500 to items 3 or 5 if Jones underfeed stoker is used; no change in prices if Murphy furnaces are used.

Heine Safety Boiler Company, Philadelphia, Pa., item 3, \$56,263, Heine boilers, Foster superheaters, Roney stokers; deduct \$1117 if Murphy furnaces are used; deduct \$300 if Wetzel stokers are used; 6, \$58,295, self-supporting lined steel stack; deduct \$1810 if plain steel stack is used; deduct \$455 if American Steiler improved reinforced steel concrete chimney is used; deduct \$610 if Weber steel concrete chimney is used; add \$2400 if Alphons Custodis chimney is used.

Henry R. Worthington, New York, item 9, \$32,750, wet vacuum system; 10, \$31,750, dry vacuum system; \$31,250, straight line tight pumps; \$30,925, straight line tight pumps, smaller size.

D'Olier Engineering Company, Philadelphia, Pa., item 1, \$88,266, Stirling boilers, Ross or Murphy stokers, Wheeler condensers; add \$950 if Roney stokers are used; 5, \$59,771, concrete chimney; 9, \$26,600; 12, \$3900, Northern Engineering crane; 13, \$88,990, same as items 5, 9 and 12.

A. D. Granger Company, New York, item 3, \$62,354; item 6, \$68,354.

The following awards have been made for machinery for the Isthmian Canal Commission, Circular No. 326, bids opened September 14:

Landis Tool Company, Waynesboro, Pa., class 1, one universal grinding machine, \$985.

Motley, Green & Co., New York, class 2, six wet tool grinders, \$132.90.

Manning, Maxwell & Moore, New York, class 3, one open side automatic surface grinder, \$755.74; class 4, one sprue cutter, \$315.20; class 5, three triple bolt cutters and one double head bolt cutter, \$3055.40.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 7, four valve reseating machines, \$350.

Niles-Bement-Pond Company, New York, class 10, one steel tired car wheel lathe, \$5476; class 12, three single head axle lathes, \$4035; class 15, one universal radial drill, \$1425.

Oliver Machinery Company, New York, class 13, one combination pattern makers' lathe, \$1275.

Prentiss Tool & Supply Company, New York, class 14, one radial drilling machine, \$1495.

Vandyck, Churchill Company, New York, class 19, one cold saw for cutting I-beams, &c., \$1550; class 20, one automatic saw grinder, \$198.

Under bids opened September 11 for supplies for the navy yards, the Compressed Air Machinery Company, San Francisco, Cal., has been awarded class 1, one lathe, \$2813; Allis-Chalmers Company, Milwaukee, Wis., class 5, one jump saw, \$704.

## Trade Publications.

**Woodworking Machinery.**—Cordesman-Rechtin Company, Butler street, Cincinnati, Ohio. Loose leaf catalogue; size 10 x 12 in.; pages 38. Large illustrations and text according to the amount of description necessary in each case are given, and each sheet is complete in itself. The machines shown include band resaws, band saws, scroll saws, circular resaws, swing cut-off saws, rip saws, a special machine known as the Variety woodworker, equipped with jointing, boring, routing and sawing attachments; a universal woodworker, surfacers, planers, tenoners, single spindle shapers, lathes, post borers, &c.

**Tumbling Barrels.**—Globe Machine & Stamping Company, 3900 Hamilton avenue, N. E., Cleveland, Ohio. Pamphlet. Describes the improved Globe oblique tilting tumbling barrels, and a new type of horizontal tumbler. The illustrations have been excellently selected to bring out the feature that it is most desired to emphasize—their lack of manipulation.

**Generating Sets.**—B. F. Sturtevant Company, Boston, Mass. Bulletin No. 139 of the company's engineering series. Presents a full line of generating sets driven by direct connected vertical inclosed engines with forced lubrication. The published list contains 14 sizes ranging from 3 to 50 kw. in output, the former driven by a 3½ x 3 in. engine and the latter by a 12 x 10 in. engine. All of the engines were especially designed for generator driving.

**Variable Speed Motors.**—Northern Electrical Mfg. Company, Madison, Wis. Bulletin No. 53, superseding Nos. 37 and 37A. Refers to the Northern single voltage variable speed systems, of which it gives an extended description in connection with illustrations of various machines equipped for individual motor drive. These include lathes, slotter, radial drill, horizontal boring machine, boring mills, sand mixer, shears and punches, &c. Speed and dimension tables are included, and some discussion of controllers and their construction and the parts in detail of the motors.

**Foundry Supplies.**—J. D. Smith Foundry Supply Company, Cleveland, Ohio. Bulletins and cover. These are separate sheets dealing with brass furnaces, illustrations and tables of sizes being given; core ovens, core oven cars, velvet blacking for coating cores, emery grinders, the Cleveland water tumbler, and the Cleveland molding machine.

**Electric Batteries.**—Holtzer-Cabot Electric Company, Boston (Brookline), Mass. Bulletins. No. 155 has reference to the Holtzer Cylinder and Monarch sal ammoniac batteries, and its supplement to H.-C. dry batteries. No. 205, replacing 112A, concerns telephone desk instruments.

**Locke Engine Stops.**—Locke Regulator Company, Salem, Mass. A reprint from *Insurance Engineering* entitled "Fly Wheel Explosions." By Wm. H. Boehm. Illustrates various fly wheel explosions in a number of large manufacturing plants. The company states that every accident shown in this reprint would have been averted had an engine stop been applied. A table of safe speeds for cast iron flywheels is included.

**Cranes.**—Whiting Foundry Equipment Company, Harvey, Ill. Catalogue No. 45, superseding No. 36. Size, 6 x 9 in.; pages, 150. This catalogue is devoted to electric travelers and other cranes for foundries, machine shops, rolling mills, steel plants, power stations, yards, docks and railroad service. The company's standard types of electric traveling cranes include three motor, four motor, double or two trolley and bridge hoist electric traveling cranes. Special designs are made to suit conditions. The parts of the electric traveling cranes are illustrated and described in detail, and special installations are illustrated in large number. Other types of cranes illustrated include electric traveling ladle cranes, gantry traveling cranes, to be operated by electricity, compressed air or hand power; electric I-beam trolleys, compressed air traveling cranes, hand-power cranes, electric transfer tables, jib cranes, pillar cranes, truck cranes, bracket cranes, &c.

**Electric Lighting.**—Cooper-Hewitt Lamp Company, Garrison place and Fayette street, Pittsburgh, Pa. Pamphlet. Subject, "The Economical Lighting of Industrial Plants." Explains the advantage of the Cooper-Hewitt lamp in various classes of lighting and gives a number of illustrations of actual installations, photographed by the light of the lamps themselves. These include the interiors of drafting rooms, big shops, laboratories, offices and factories in general. Various types of the lamp are also illustrated.

## CONTENTS.

	PAGE.
A Model College Engineering Building. Illustrated.....	1067
The English Trade Situation.....	1073
Bounties for the Canadian Iron and Steel Industry.....	1074
System in Finding Foundry Costs.....	1077
A large Bliss Drop Hammer. Illustrated.....	1078
Natural Gas Production in 1905.....	1079
The Kennedy Valve Mfg. Company's New Plant. Illustrated .....	1080
The Coates Radial Drill. Illustrated .....	1081
The Hamilton-Holzwarth Turbine in Germany.....	1081
The American Brass Founders' Association.....	1081
Blast Furnace Blowing Engines. Illustrated.....	1082
New Publications .....	1085
Editorial:	
Vacancies in the Rolling Mill List.....	1086
Great Britain's Iron Ore Resources.....	1086
A New Era in Electric Railroads.....	1087
A Result of 20,000-Ton Battleships.....	1087
Correspondence .....	1088
The British Plate and Angle Agreement.....	1089
Joseph Wharton on the Iron Market.....	1089
Obituary .....	1090
The Virginia Iron, Coal & Coke Company.....	1091
Petroleum Production in 1905.....	1091
News of the Works:	
Iron and Steel .....	1092
General Machinery .....	1092
Power Plant Equipment .....	1092
Foundries .....	1092
Bridges and Buildings.....	1093
Fires .....	1093
Hardware .....	1093
Miscellaneous .....	1093
Personal .....	1094
The National Metal Trades Association.....	1094
The Iron and Metal Trades:	
A Comparison of Prices.....	1095
Chicago .....	1095
Philadelphia .....	1097
Cleveland .....	1098
Birmingham .....	1098
Cincinnati .....	1099
Pittsburgh .....	1099
The German Iron Market.....	1101
New York.....	1102
Metal Market.....	1102
Iron and Industrial Stocks.....	1103
Large Steel Works Contracts.....	1103
The Phoenix-Hoerde Merger.....	1104
The United Iron & Steel Company.....	1104
The Asbestocel Covering for Heating Systems.....	1104
The American Shipbuilding Company.....	1104
Carnegie Extensions at Duquesne.....	1104
The Machinery Trade:	
New York Machinery Market.....	1105
Cincinnati Machinery Market.....	1106
New England Machinery Market.....	1106
Philadelphia Machinery Market.....	1107
Government Purchases.....	1108
Trade Publications.....	1109
Hardware:	
Condition of Trade.....	1110
Notes on Prices.....	1111
Death of A. J. Cordier. Portrait.....	1113
Iowa Hardware Convention.....	1113
E. J. Martin's Sons Catalogue.....	1113
Trade Winning Methods.....	1114
Badger Brass Mfg. Company.....	1114
The Atlantic City Conventions. Portraits.....	1115
System for the Retailer. Illustrated.....	1125
Factory Cost and Business Methods. Illustrated.....	1126
Manning, Bowman & Co.'s Catalogue.....	1127
J. A. Henckels.....	1128
McKinney Mfg. Company's Catalogue.....	1128
Fernald Mfg. Company.....	1128
Requests for Catalogues, &c.....	1128
Price-Lists, Circulars, &c.....	1128
Whitman & Barnes Mfg. Company.....	1128
Miscellaneous Notes:	
Bosley's Patent Air Stops.....	1129
Galvanized Garbage Cans.....	1129
Ladies' Suit and Skirt Hangers. Illustrated.....	1129
The Caldwell Improved Cotton Planter. Illustrated.....	1129
Jackson's Belt Fasteners. Illustrated.....	1129
The Voss Automatic Washing Machine. Illustrated.....	1130
Stowe's Shingling Kit. Illustrated.....	1130
The Wright Pencil Sharpener. Illustrated.....	1131
The Yankee Can and Bottle Opener. Illustrated.....	1131
Current Hardware Prices.....	1132



# HARDWARE

THE Atlantic City conventions have been held and the merchants and manufacturers have found their way back to their accustomed tasks. Something was doubtless gained by the outing, as those who attended what was an exceptionally pleasant gathering received the benefit there is in breaking away from the routine of office, store or factory and getting in touch with their compeers and competitors under auspices which made sociability and the spirit of fraternity the order of the day. In all this there was more or less of the atmosphere of business, as those who thus came together naturally touched at least in a general way on the interests which they have in common, while there was a careful avoidance of efforts to transact business and more or less of an indisposition to talk shop. While there was much advantage in the opportunities afforded for an interchange of views in regard to the trade situation and the various trade questions, the principal utility as well as the chief pleasure of the occasion was in the forming of acquaintances and the strengthening of personal relations between those in attendance. A very cordial spirit certainly pervaded the gathering and many things conspired to render it enjoyable. In this one of its chief ends was attained. Under the guise of a business assembly delegates were permitted to enjoy a very agreeable outing.

The attention of the members of the two associations was, however, given to a sufficient variety of dignified and difficult subjects, as some of the unsolved problems of the trade were touched upon if they were not settled:

The vexed question of syndicate buying was discussed by the jobbers, and an effort made to limit its advantages to the large houses and deny the privilege to the smaller jobbers and the enterprising and aggressive retailers.

The subject of transportation came up in both associations and several projects were suggested with a view to doing away with the delays, overcharges and perplexities suffered by merchants and manufacturers in connection with the carriage of their raw materials and finished goods. While nothing definite was accomplished or even agreed upon well grounded complaints thus found perhaps some relief in their formal and emphatic expression.

The mischiefs of retail mail order houses were touched upon with a mention not altogether definite as to what will in the future be done still further to protect the trade from their inroads.

The duty of manufacturers in helping retailers by supplying them with suitable reading matter and in other ways was alluded to, while very little was said in regard to what the jobbers should do in this direction, although it is generally assumed in these gatherings that the retailer should show his loyalty to a favorite theory of distribution by purchasing his goods from the jobber and refraining from disturbing things by going direct to the manufacturer.

High ground was taken in regard to labor as a trust to which perhaps the Government in its zeal might properly give attention.

The time honored protest of manufacturers against being called upon to pay for the jobbers' catalogues was given voice with the suggestion that the National Hardware Association declare itself on the subject.

The movement in the direction of diminishing or doing away with the cash discount did not seem to meet

with favor—a project which would undoubtedly find its most effective quietus if merchants would only live up to the terms for which they contend so eloquently and refrain from taking off the 2 per cent. for cash unless the remittance is made strictly within the specified number of days. Perhaps, however, talking about the matter will do some good for the time at least.

One cannot help wondering what will be the result of all this discussion. There is only too good reason to anticipate that there will continue to be congestion of freight, inconsistency in classifications and delayed shipments; that syndicate buying even under the restraining influence, perhaps we might say the fostering care of the Jobbers' Association, most of whose members employ the system, will broaden out in the service of smaller houses; that the labor problem will still vex manufacturers; that catalogue houses will continue their disturbing growth and in one way or another prosper and expand despite the protests which with more or less sincerity and consistency are uttered by those who deprecate their methods; that manufacturers will at least occasionally be called upon to help to pay for the printing of jobbers' catalogues, and that a greater or less degree of laxity will still prevail in living up to the terms of payment and the cash discount be taken from many a bill from which in fairness it should not be deducted. What matters it if not one of the abuses under discussion is disposed of or seriously affected? Something may be accomplished in the exchange and interchange of opinion, in the making of protest and counterprotest, to bring about a better understanding of the problems which usually have more sides and more manifold bearings than zealous agitators realize. Some contribution may thus be made toward a gradual betterment of conditions. Fair-minded men at any rate will realize the situation more adequately and be able to reach sound conclusions and perhaps become instrumental in effecting some reforms which should be to their advantage and the advantage of the trade at large. If, however, little is accomplished in the way of actual betterment of conditions and methods it is a comfortable reflection that things are going on so well that if they continue in the old channel it will not be after all a serious matter. With all the troubles of the trade there seems to be a lot of prosperity for those who work for it and deserve it.

## Condition of Trade.

The gathering of manufacturers and merchants last week at Atlantic City presented a peculiarly favorable opportunity to gauge the feeling of the trade in regard to existing business conditions and the outlook for the future. Seldom has a body of men more thoroughly representative of Hardware interests been brought together, coming as they did from all parts of the country, and including many of the leading manufacturers and jobbers. The uniformity of their expressions in regard to the great volume of current business and the very gratifying prospects for the continuance of excellent conditions well into 1907 would be surprising if it were not that the trade are familiar with the facts in the case and animated in practically every department by a most confident feeling. The difficulty in getting goods is still a marked feature of the situation and in many lines man-

ufacturers are getting unpleasantly behind their orders. Prices, owing to the state of things in the Iron and Metal markets and the heavy demand upon stocks and manufacturing facilities, are advancing almost daily in one line or another. Manufacturing costs, too continue to creep up. In the existing condition of things it is not easy to decline a request for higher salaries or increased wages. As naturally at this season winter goods are in especially active movement to the stores of such retail merchants as are not already stocked in these lines. Holiday goods too are moving freely as an increasing number of merchants are giving attention to this class of products. There appears to be no improvement in the Builders' Hardware situation so far as meeting the requirements of the trade is concerned. The manufacturers are far behind their orders, and the trade suffer not a little inconvenience in consequence. Foreign business, despite the pressure of domestic trade, is in large and growing volume.

#### Chicago.

The growing scarcity and increased cost of raw materials are being reflected in the Hardware trade by a continued upward movement of values. Price changes have been more numerous this month than during any like period this year, and still further changes are anticipated. In the heavier lines production is curtailed on account of the steel shortage, and deliveries continue to be delayed owing to the scarcity of cars. Western roads during the week diverted a large portion of their rolling stock from the regular channels of trade for the movement of crops in the Northwest, and the shipment of manufactured commodities during the next two or three months will become a more serious problem than at any time this year. In the South the movement of the cotton crop is engaging the attention of the railroads, and the car supply for the shipment of raw material in the form of pig iron has been reduced fully 50 per cent. Notwithstanding the heavy purchases of Wire products in September the totals thus far this month show practically no declines from the record established during the first three weeks in September. Specifications are accumulating at the mills, and on practically all grades of Smooth Wire used for manufacturing purposes deliveries are deferred from 30 to 60 days. The consumption of Wire Nails shows no decline, Pacific Coast demand being practically insatiate. While there has been a slight gain in production, as compared with September, the Wire mills are still suffering from a shortage of labor and of Steel in the form of Billets and Rods. Local distribu-

#### NOTES ON PRICES.

ters of Steel Bars are now quoting 2 cents on assorted sizes and 2.15 to 2.25 cents is asked for Iron Bars for immediate shipments. On Black and Galvanized Sheets premiums of \$2 are demanded over existing store prices on orders comprising assorted sizes, and stocks in the hands of jobbers are exceedingly low, while mill shipments cannot be had in less than three months.

**Wire Nails.**—Current demand and specifications on contract orders result in a large volume of business. The mills are behind on orders owing to the scarcity of steel and labor. The available supply of cars is reported as being somewhat larger. There does not appear to be any immediate prospect of an improvement in the steel situation, and manufacturers who are dependent upon outside sources of supply find difficulty in obtaining a sufficient quantity of Rods to meet their requirements. This has resulted in premiums on Nails over official quotations being asked in some cases. The market is very firm. Quotations are as follows, f. o. b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....\$1.85  
Carload lots to retail merchants.....1.90

**New York.**—Demand is continuous and in very satisfactory volume, exceeding that for the corresponding

period of last month. A very general quotation on small lots at store is on the basis of \$2.05 per keg.

**Chicago.**—Notwithstanding the heavy tonnage placed with mills last month there is every indication that the total volume of business for October will equal that booked during September. Considering the season of the year the buying is unprecedentedly heavy, indicating that stocks are very low and that consumption is at a record rate. While the production during the first three weeks of this month shows a slight increase over the same period in the preceding month nevertheless a greater output would have been secured but for the steel shortage and the scarcity of labor. Official quotations, which are being firmly maintained, are as follows: \$2 in car lots to jobbers and \$2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

**Pittsburgh.**—A moderate amount of new business in Wire Nails is being placed, but the large trade covered itself for some time ahead prior to the recent advance in prices and is now specifying very freely on these contracts. The mills are still from three to four weeks or longer behind in shipments, but some improvement in this direction is noted, the supply of cars in the past two weeks having been slightly better. There is still a shortage in Steel which restricts output to some extent. Some small Wire Nail mills that are depending upon the open market for their supply of Rods advise us that it is almost impossible to get deliveries of Rods, the leading makers requiring their entire output for their own needs. For this reason some of the smaller mills are asking premiums over official prices on certain sizes of Wire Nails. It is intimated that another advance in prices of Wire Nails may be made before long, but nothing official about this has been given out. Prices are firmly maintained as follows: Wire Nails, \$1.85 in car loads to the large jobbing trade, and \$1.90 in car loads to retail merchants, f. o. b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days. The above prices are now absolute minimum of the market.

**Cut Nails.**—Demand is very large and mills are unable to meet the requirements of the trade, owing to shortage of cars and scarcity of Steel. Deliveries are at least two or three weeks behind, and premiums are being offered for anything like prompt shipments. Iron Cut Nails are very scarce, and command premiums. Quotations are as follows, f. o. b. Pittsburgh: Carload lots, to jobbers, \$1.90; less than carloads, to jobbers, \$1.95; less than carloads, to retailers, \$2.05. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 and 10 cents advance on Steel Cut Nails.

**New York.**—There is a continued scarcity of sizes most in demand, particularly 8, 10 and 20 penny. Manufacturers are unable to keep jobbers' stocks up to requirements, both on account of scarcity of Steel and shortage of cars. Demand has shown an increase this fall with no corresponding enlargement of facilities to provide for it. The local market is regarded as being in better shape, as most of the stocks bought at extremely low prices are exhausted. A very general quotation on small lots at store is on the basis of \$2.05 per keg, although future business for car lots has been declined at this figure.

**Chicago.**—Demand for Cut Nails is reported to be very heavy by local distributors and beyond their ability to handle, owing to the scarcity of cars and Steel shortage. Quotations prevail as follows: Steel Cut Nails, in car lots, \$1.95 to \$2; less than car lots, \$2.05; Iron Cut Nails, \$2.05 to \$2.10, in car lots; less than car lots, \$2.15.

**Pittsburgh.**—The mills making Cut Nails are considerably behind in deliveries, owing to shortage in cars and scarcity of Steel. We also note that Iron Cut Nails are extremely hard to get and in some cases command as much as 15 to 20 cents a keg advance over Steel Nails. The minimum prices of Cut Nails for delivery in the Pittsburgh District is \$2 a keg, the two mills in the Wheeling District being unable to promise deliveries inside of three to four weeks. Official prices, on which however, premiums of 10 to 15 cents per keg are being



paid for reasonably prompt deliveries, are as follows, f. o. b. Pittsburgh: Carload lots, to jobbers, \$1.90; less than carloads, to jobbers, \$1.95; less than carloads, to retailers, \$2.05; Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 and 10 cents advance on Steel Cut Nails.

**Barb Wire.**—There is a falling off in new business incident to the advanced season, but specifications on contract orders are heavy. Mills are catching up with orders and are making more prompt shipments. Prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots .....	\$2.00	\$2.30
Retailers, carload lots .....	2.05	2.35
Retailers, less than carload lots.....	2.15	2.45

**Chicago.**—New tonnage is now showing a considerable decline, a condition which is naturally expected this late in the fall season. Specifications, however, are heavy on material already contracted for and stocks both in the hands of distributors and manufacturers are light. Prices, which are firmly maintained, are as follows: To jobbers, Chicago, car lots, Painted, \$2.15; Galvanized, \$2.45; to retailers, car lots, Painted, \$2.20; Galvanized, \$2.50; retailers, less than car lots, Painted, \$2.30; Galvanized, \$2.60; Staples, Bright, in car lots, \$2.10; Galvanized, \$2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—Demand is heavier than usual for this season of the year, but the mills have caught up pretty well on deliveries and are able to make fairly prompt shipments. Tonnage so far this month compares favorably with September. The supply of cars has improved in the past two weeks, but the continued shortage in Steel is still restricting output. The market is very firm, as follows: Painted Barb Wire, \$2, and Galvanized \$2.30, in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

**Smooth Fence Wire.**—The usual production of the mills is being interfered with on account of shortage of Steel, while demand is unusually heavy for Wire used for manufacturing purposes. Mills are three to four weeks behind on deliveries. The market is consequently very firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads .....	\$1.70
Retailers, carloads .....	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized.....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

**Chicago.**—The mills are still unable to cope with the heavy demand, especially those grades that are used for manufacturing purposes. While the average shipment is delayed from four to six weeks, special grades in many instances cannot be had in less than three months. The production only shows a slight increase this month, while specifications on contracts are growing heavier. Prices are being well maintained, as follows: Jobbers, \$1.85, f.o.b., Chicago, in car lots; retailers, \$1.90.

**Pittsburgh.**—Specifications on contracts placed before the recent advance in prices are coming in very freely, and the mills are three to four weeks behind in deliveries. The car supply is somewhat better, but there is a continued shortage in Steel, which prevents the mills from getting out their full tonnage. Slight premiums in prices are still being asked by some of the smaller mills. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads .....	\$1.70
Retailers, carloads .....	1.75

The above prices are for base numbers, 6 to 9.

**Rope.**—Business is generally reported by manufacturers as good, though some say they could care for more in hard fiber goods. Others report that so far this month

is ahead of the corresponding period of September in volume of sales. The best grades of Manila Fiber have advanced in price, and receipts are not as large up to the present time as last year. There is, therefore, a possibility of an advance in the best class of pure Manila Rope. Prices are fairly well maintained on all classes of Rope. New York quotations on Rope are as follows: Pure Manila, 12¼ to 12½ cents; B quality, 11½ cents; Pure Sisal, 9 cents; No. 2 quality, 7½ to 7¾ cents; No. 1 Jute, ¼ in. and up, 8 to 8¼ cents; No. 2 Jute, 7½ to 7¾ cents per pound.

**Brass Butts.**—Quotations on Brass Butts have recently shown great firmness and it is said that well posted buyers have been placing liberal orders, as an advance in these goods may naturally be expected as a result of recent upward movements in raw material.

**Wire Clothes Lines.**—An advance of 5 cents per dozen in Wire Clothes Lines has been made by several manufacturers.

**Galvanized Ware.**—There have been frequent changes in Galvanized Ware recently, with a movement of the market toward a higher level. The trade is now in receipt of a new price-list on Pails, Tubs and Coal Hods which is subject to somewhat better discounts than the previous list, although the net prices remain substantially the same. There are indications of important developments beneath the surface among some of the leading manufacturers of these goods.

**Stove Bolts.**—A strengthening tendency has been observed in the Stove Bolt market, to which attention was called in these columns some weeks ago. This is undoubtedly due to the heavy demand, causing many manufacturers to fall behind their orders, rather than to any concerted or harmonious action. The price of these goods is still low, and with a continuance of present trade conditions may fairly be expected to show a further upward tendency.

**Window Glass.**—According to reports, Tuesday, the 23d inst., was the last day on which Glass manufacturers were allowed to put up the deposit of \$100 per pot to complete the arrangements in forming the National Brokerage Company, which is to act as selling agent for the factories. It is understood that unless contracts representing an output of 2000 pots were received on that day, including the factories recognized by the committee as being important factors in the business, the committee would abandon the idea of forming the brokerage company and would return the contracts and checks received. In such a case the entire scheme of bettering market conditions would fall through. Up to the present time no report of the outcome has been received. Jobbers' quotations, from jobbers' list, October 1, 1903, are as follows: Greater New York, single, 90 and 10; double, 90 and 15 per cent. discount.

**Linseed Oil.**—Crushers have announced an advance of 1 cent per gallon in the price of Oil, owing to the strong position of Flax Seed and the limited spot supplies. Car shortage is making it difficult to supply Oil in sufficient quantity to meet the requirements of the trade. The strength thus imparted to the market has stimulated buying. New York quotations are as follows, according to quality and seller: City Raw, 39 to 40 cents per gallon. Out of town Raw, 38 to 39 cents per gallon. Boiled Oil is 1 to 2 cents per gallon over Raw.

**Spirits Turpentine.**—The desire to sell in Southern markets and lack of buyers, induced a decline in prices, which in turn stimulated demand and later caused an advance in the South and at this point. This has retarded buying to some extent, which is confined to small lots in this market. New York quotations are as follows, according to quantity: Oil Barrels, 69 to 69½ cents; Machine Made Barrels, 69½ to 70 cents per gallon.

THE STORE of the Prowell Hardware Company, Birmingham, Ala., was completely destroyed by fire on the 18th inst. The loss is estimated at \$200,000, with insurance amounting to \$148,500. Temporary quarters have been secured and business will be resumed at once, as the firm carried a large stock of goods at its warehouse located in another part of the city.

## DEATH OF A. J. CORDIER.

**A**UGUSTE J. CORDIER, president of the Lalance & Grosjean Mfg. Company, died at his home in Woodhaven, L. I., Monday afternoon, October 22. He became critically ill October 16 last year, and for six months was seriously sick, his first short visit to his office in New York being on April 18 last, but rather as a visitor than to reassume the cares and burdens of active business life. It was feared then that his energies had become irretrievably impaired and that even partial restoration was impossible. The beginning of the end came last week when, on Wednesday, he was stricken with apoplexy.

Mr. Cordier was born February 27, 1854, at 53 Leonard street, in the old city of New York, which neighborhood was then populated largely by people of French extraction. When about 12 years old he entered the employ of Lalance & Grosjean, then a copartnership business, as office boy at the New York office, in Pearl street, at a salary of \$3 per week. What is now a great industrial enterprise with a worldwide reputation, partic-



AUGUSTE J. CORDIER.

ularly in Agate Nickel Steel Enameled Ware and other kindred lines, was then in its infancy. Earnest, faithful service, strict attention to duties and a peculiar aptitude for business, attracted the notice of his employers, and as he continued to qualify for more important work he was advanced to the positions of entry clerk, city salesman and traveling salesman. The comparatively small factory at Woodhaven had been enlarged to meet the continually increasing demands for its numerous house furnishing products, and branches were established in Boston, Chicago and New Orleans.

The incorporation of the Lalance & Grosjean Mfg. Company occurred September 20, 1869, the business having been started originally in 1850. Mr. Cordier successfully mastered the details of the business, both in the producing as well as the selling departments, but his predominating genius was his unqualified ability widely to distribute the manufactures of the company, this popularity with the trade really resulting in advancing him from a selling position to second vice-president in 1889 and first vice-president in 1892. His business associates for a third of a century lay great stress on his ability to sell goods and refer to him as without a peer in their line and as the best traveler the house had.

Florian Grosjean, founder of the business and father-in-law of Mr. Cordier, died in 1903 at a ripe old age, when Mr. Cordier was elected to succeed him as president.

The subject of this sketch was generous, genial, an

excellent host and entertainer, companionable and of charming personality. He was highly esteemed in both business and social circles, and will be sincerely mourned by a host of friends and acquaintances. His kindly greeting, spontaneous good humor and magnetic disposition won and kept friends. Of exceptionally fine physique, he was apparently in excellent health until the breaking up of a year or more ago.

At Woodhaven he lived in the fine residence with its beautiful grounds, built by Mr. Grosjean, and which was conveniently near to the works, although Mr. Cordier lived much more of the time in Brooklyn. He was identified with many organizations, social as well as of a business character. In addition to being president and a director of the company he was president and a director of the Woodhaven Water Company, belonged to the Chamber of Commerce, New York, and for some time had been a director of the Phoenix and Hanover banks in Manhattan. Socially he belonged to the Union League and Fulton clubs, New York; the Montauk, Riding and Driving clubs, and the New England Society in Brooklyn, and was also a member of the Chub Club of Jamaica.

Mr. Cordier is survived by a widow, daughter of Florian Grosjean; a son, Auguste J., Jr., and a daughter, Alice Marie.

The funeral services will be held Thursday afternoon, October 25, at 2 o'clock, at his late residence in Woodhaven.

## IOWA HARDWARE CONVENTION.

**T**HE ninth annual convention of the Iowa Hardware Association will be held at Des Moines, Iowa, February 19, 20, 21 and 22. The morning and evening of each day will be devoted to the exhibit features of the convention, and the afternoons to the work of the association. This division of the time is made in order to prevent any conflict between the two features of the convention. The Shrine Temple in which the exhibits will be displayed is a building perfectly adapted to the purposes of a Hardware Exposition, and it is expected that this feature will attract a large number of merchants who have never yet attended an association meeting. The committee in charge of the details of the convention have decided to cut out the souvenir programme, but will issue an official gazette at the close of the convention. This publication will contain the complete proceedings of the convention from the official stenographer's notes, with reproductions of all papers, addresses and resolutions.

## E. J. MARTIN'S SONS' CATALOGUE.

**E.** J. MARTIN'S SONS, Rockville, Conn., designers and makers of the well-known Kingfisher brand of Braided Silk Fish Lines, have issued an especially handsome catalogue illustrating the various kinds of Lines they are manufacturing and the forms in which they are put up. Some of the Lines are dyed, others enameled, and all are warranted to be free from weak spots, rough places and flaws of any kind. The Kingfisher Lines are referred to as sold at as low a price as their quality permits.

At a meeting of the directors of the New York State Association of Retail Hardware Dealers, held last week at Syracuse, it was decided to hold the next annual convention in that city. The sessions will extend over four days, February 19-22. The convention will be held at the Alhambra Music Hall, which is admirably adapted to the purpose. One floor will be devoted to the business meetings of the association, while another will be devoted to Hardware exhibits by manufacturers, which will be a special feature of the 1907 gathering. The hall provided for this purpose is 76 by 123 ft. in dimensions, so that there will be accommodation for many exhibits. J. B. Foley, Syracuse, secretary of the association, will be pleased to answer any inquiries in regard to space.



## TRADE WINNING METHODS.

*This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### TEN PER CENT. DISCOUNT DURING SPECIAL SALES.

**G**EORGE C. PENNINGTON & CO., Waverly, Neb., depend very little on the local newspaper to draw attention to their business, and distribute through the mails and otherwise a good deal of advertising matter in the way of circulars, leaflets, &c. One of their most effective methods of securing trade is by means of cards, one of which is reproduced herewith. These cards are about 8 x 6 in. in size, different colors being used. They are

Every Razor, Pocket Knife, Shear or Butcher Knife, all Silverware,  
Such as Tea and Table Spoons, Knives, Forks, Etc.,  
—GO AT A—  
**DISCOUNT OF 10 PER CENT  
NEXT WEEK**

It's because we want your constant ATTENTION that we continue to make special prices. Remember we only make this offer for ONE week. NO LONGER. So don't expect it. And that time is next week.

Terms: Cash. Butter or Eggs.

Yours Truly,

**GEO. C. PENNINGTON,**  
Waverly, - - - - - Nebraska

*A Nebraska Merchant's Card Announcing Special Sales.*

issued from time to time and good results are reported from the special sales thus announced. The period covered by the sales is generally about a week, and the terms, it will be observed, are cash or produce. Another special offer embraced Clothes Wringers, Wash Boilers, Clothes Baskets, Wash Tubs and Washboards, while a third had reference to Green and White Chrysollite Ware. Other lines of goods are featured in a similar manner. The firm has a mailing list for all competitive towns as well as Waverly, and the parties on this list are circularized thoroughly and systematically.

### POINTERS FOR THE HARDWAREMAN.

BY ON-THE-ROAD.

**N**O buyer is so shrewd but that his stock will develop some slow selling goods. But it's his own fault if they continue indefinitely to occupy space in the store. Better sacrifice them a little than to carry them over the season. They will certainly not improve in value, and the money tied up in them will earn nothing. The big department stores of the large cities make it a rule not to carry over seasonable goods. The advertising of these houses is worth studying. Liberal space is taken to stir the public up to a desire to purchase these stock laggards (which, of course, are not always so described), and the bargain Knife is brought into action. If the first surgical play does not move the goods, another cut in price is made, followed by further slashes until the disturbing merchandise has all been disposed of. Don't let stickers stick. An article is worth not what it costs, but what it will bring. The first loss is the smallest loss. The longer you wait the less the goods are worth.

One of the most practical methods of bringing the farmer to town is to provide him with good roads for driving. Good roads do not extend the business of the large mail order houses, and if merchants in country

towns and small cities work together they can do much to bring about improvement in the highways of their territory. The farmer's trade is of so much importance in many parts of the country that **Good Roads.** merchants should zealously guard against the making of any local ordinances which are likely to prove unpopular with the tillers of the soil.

### BADGER BRASS MFG. COMPANY.

**T**HE BADGER BRASS MFG. COMPANY, Kenosha, Wis., which has been making extensive improvements to its plant, completed the addition to the factory and started power October 1. The addition is 50 x 110 ft., two stories in height. The first floor of the new building is used for the final cleaning, packing and shipping departments and permits a rearrangement of the present factory, which was built two years ago especially for the manufacture of Automobile Lamps and Generators. The old part is 200 ft. square exclusive of the brass foundry, which is 40 x 75 ft., and storage buildings for packing materials, &c. The rearrangement of the machine department allows an extension of the press room and buffing room. In the pressroom another Bliss press, which weighs 34,000 lb., and which will be used for drawing seamless brass shells used for the generators, is being installed. The second floor of the new addition is used as a tool and machine room. Electric power is utilized and is so arranged that it can be furnished by the company's own electric light plant or switched to the electric light and power company of the city. The power plant contains a 150-hp. Allis-Chalmers engine direct connected to a 100-kw. Bullock generator and small motors are provided for the various departments except the buffroom, which is belted from a main shaft from the engine direct. The new building was made necessary because of the increased demand for the Solar Automobile and Motor Lamps. An Eastern branch was recently opened in *The Iron Age* Building, New York. With the new factory in the East and the addition to the factory at Kenosha the company expects to increase its sales about half a million dollars over last year. One hundred more men will be added to the Kenosha plant, giving a working force of between 400 and 425.

Steps have been taken to incorporate what is perhaps the oldest Hardware business in the country by the filing at the Secretary of State's office at Hartford, Conn., of the certificate of organization of the Eaton-Chase Company. This business has been conducted continuously at Norwich, Conn., as a partnership, since 1764, having an unbroken record of successful management from its beginning to the present time. The authorized capital is \$75,000, of which \$51,000 has been subscribed. Messrs. Eaton and Chase retaining their present interests, and \$22,000 additional cash capital having been contributed by new stockholders. It is proposed to enlarge the business and take on additional lines, entering also more largely into the electrical contracting business.

A company capitalized at \$50,000 has been formed at Charlotte, N. C., and has purchased the interest of the Charlotte Hardware Company, which business it will continue under that title on an enlarged scale. J. C. McNeely is president of the new corporation; others interested are W. H. Belk, J. H. Wearn, R. L. Erwin, J. S. Neely and Robert Glasgow.

The Monessen Hardware Company, Monessen, Pa., has been incorporated with a capital of \$15,000 by J. D. Letee, William Young, Charles S. Pore and Blanche Shupe, all of Monessen.

Tussey Hardware Company, T. C. Tussey, proprietor, has bought the Hardware store of L. Gilkey & Son., Ambia, Ind.

## THE ATLANTIC CITY CONVENTIONS.



F. S. KRETSINGER.



ROBERT GARLAND.



BRACE HAYDEN.



F. D. MITCHELL.

THE annual conventions of the National Hardware Association and the American Hardware Manufacturers' Association have come to be regarded in trade circles as the event of the year. The meetings just concluded evidenced no slackening of interest, being fully commensurate with the high standards attained on previous occasions. It was, indeed, the general consensus that this year's convention was from all points of view among the most successful that the associations have ever held. The attendance was large both of manufacturers and jobbers and the latter were especially enthusiastic as to the character of their meeting and the profit to be derived from their deliberations. Matters discussed by the manufacturers were put in the form of resolutions which were presented by a committee appointed for that purpose and so acted upon. In this way time was economized and conservative and deliberate action secured.

A feature of the opening meeting of the National Hardware Association was the presence of representatives of several other trade organizations as guests of the association. Especial honor was accorded to the officers of the

**Canadian Wholesale Hardware Association,** whose president, T. H. Newman, and secretary, James Hardy, were introduced and made brief addresses. They gave figures showing the great favor with which Amer-



CHARLES W. ASBURY.



W. S. WRIGHT.

ican products are held in the Dominion, due, as they explained, not alone to the proximity of the two countries but to the fact that the manufactures of the United States are suited to Canadian requirements. They referred felicitously to the cordial relations existing between the two countries. Several other representatives of the Canadian trade were present during the week for a longer or shorter time and it was observed that they were by no means strangers among the American jobbers and manufacturers.

**National Retail Hardware Association.**

The National Retail Hardware Association was represented by its president, E. M. Bush, Evansville, Ind.; ex-president, W. P. Bogardus, Mt. Vernon, Ohio; secretary, M. L. Corey, Argos, Ind., and S. R. Miles, Mason City, Iowa, and A. H. Abbe, New Britain, Conn., members of the Executive Committee. These gentlemen were received with cordiality and their presence was favorably commented upon by jobbers and manufacturers alike. President Bush was introduced at the opening meeting and delivered an able address, which is given elsewhere.

**Southern Hardware Jobbers' Association.**

The Southern Hardware jobbers were represented by their able and popular secretary, W. W. Webber, Ft. Smith, Ark., who made a brief but eloquent address when introduced at the opening session. His remarks were in the true Southern style, full of loyalty to his own organization, and referring happily to the personal and social advantages and opportunities of association work. Other



T. JAMES FERNLEY.



E. M. BUSH.



S. NORVELL.



JOHN DOXAN.



members of this organization, which holds an honored position of pioneer in Hardware organization, were also in attendance.

#### Identification Badges.

The system of identification by badges was devised by F. D. Mitchell, the efficient and popular secretary of the manufacturers' association. It was successfully tried last year at Washington, as well as at the Hot Springs convention in June, and bids fair to be a fixture at these meetings. Besides giving the names, addresses and business affiliations of the wearers, the badges also indicated at a glance jobbers, manufacturers or guests by the color of their ribbons, which were red, blue and white, respectively. A classified key was also furnished, printed just prior to the opening of the convention, giving the names of all persons, including ladies, who were expected to be present.

#### Officers of the American Hardware Manufacturers' Association.

To the regret of the manufacturers President F. S. Kretsinger positively declined a re-election. His administration has been marked by great efficiency and has been highly beneficial to the association, with which from the first he has been influentially identified. Mr. Kretsinger, however, is a very busy man, with large and varied interests, and expressed himself as feeling justified in laying aside the responsible duties of the presidency in view of the number of able men who are available to carry on the work and who are, indeed, entitled to the honor which belongs to the position. The association is to be congratulated, however, in selecting as his successor a man of whose qualifications, both in counsel and as a presiding officer, it has had ample evidence. Under Mr. Asbury's direction the association is assured of a year of wise and energetic activity and progress. Other changes will be noted in the elevation to the vice-presidency of Robert Garland, who has so ably served the association as chairman of its Executive Committee, and the election to the Executive Committee of F. E. Muzzy, C. A. Earl, W. T. Johnson and C. M. King. Following is the complete list of officers for the ensuing year:

##### PRESIDENT.

Charles W. Asbury, Enterprise Mfg. Company, Philadelphia, Pa.

##### VICE-PRESIDENTS.

George W. Corbin, Corbin Cabinet Lock Company, New Britain, Conn.

Wm. M. Pratt, Goodell-Pratt Company, Greenfield, Mass.

Robert Garland, Garland Nut & Rivet Company, Pittsburgh, Pa.

##### SECRETARY-TREASURER.

F. D. Mitchell, 309 Broadway, New York.

##### EXECUTIVE COMMITTEE.

F. E. Muzzy, J. Stevens Arms & Tool Company, Chicopee Falls, Mass.

C. A. Earl, Corbin Screw Corporation, New Britain, Conn.

W. T. Johnson, American Axe & Tool Company, Glassport, Pa.

C. M. King, McKinney Mfg. Company, Pittsburgh, Pa.

C. F. Carrier, Cronk & Carrier Mfg. Company, Elmira, N. Y.

Edward Ingalls, Atha Tool Company, Newark, N. J.

Edward M. Kemp, Wabash Screen Door Company, Chicago, Ill.

#### Officers of the National Hardware Association.

But one change was made in the officers of the National Hardware Association. Chas. H. Turner of the Albany Hardware & Iron Company, Albany, N. Y., succeeding Frederick Barker, Elmira, N. Y., on the Executive Committee. The enforced retirement of Capt. Barker on account of ill health was referred to with the greatest regret by the members of the association, among whom he is greatly esteemed for his rare personal qualities, excellent judgment and broad business experience. Following is the list of officers for the ensuing year:

##### PRESIDENT.

W. S. Wright, Wright & Wilhelmy Company, Omaha, Neb.

##### FIRST VICE-PRESIDENT.

John C. Koch, John Pritzlaff Hardware Company, Milwaukee, Wis.

##### SECOND VICE-PRESIDENT.

Brace Hayden, Dunham, Carrigan & Hayden Company, San Francisco, Cal.

##### SECRETARY-TREASURER.

T. James Fernley, Philadelphia, Pa.

#### EXECUTIVE COMMITTEE.

P. E. Strauss, Flitz, Dana & Co., Boston, Mass.

R. M. Dudley, Gray & Dudley Hardware Company, Nashville, Tenn.

W. D. Taylor, George Worthington Company, Cleveland, Ohio.

J. D. Moore, Moore & Handley Hardware Company, Birmingham, Ala.

Chas. H. Turner, Albany Hardware & Iron Company, Albany, N. Y.

A. J. Bihler, James C. Lindsay Hardware Company, Pittsburgh, Pa.

#### Jobbers' Membership.

The Committee on Membership of the National Hardware Association reported that a number of applications had been received during the year, some of which had been acted on favorably, while others are being held for further consideration. It stated that the standard of qualifications for membership was being jealously maintained, thus conserving the best interests of the present members and sustaining the strength and standing which the association has honorably acquired among the mercantile organizations of the country. Following are the firms added during the past year. Duke, Peterson & Co., Baltimore, Md.; Nebraska Hardware Co., Lincoln, Neb.; Haw & Simmons, Ottumwa, Iowa; Carter, Donlevy & Co., Philadelphia, Pa.; L. D. Berger, Philadelphia, Pa.; Calvert & Holloway, Philadelphia, Pa.; Roberts, Sanford & Taylor Company, Sherman, Tex.

#### Report of the Press Committee.

J. R. Nutting, chairman of the Press Committee of the National Hardware Association, reported that while little business had come before the committee as a whole, he believed that the association would benefit by greater activity in this direction and recommended that the official views of the organization on political and economic questions should from time to time be expressed through its authorized committee in the public press. A portion of the report follows:

We think the press is a power, sometimes for good. We believe that there is no way that public sentiment can be formed so quickly, thoroughly and effectively as through the daily and weekly newspaper press. Our association is large and powerful, has a membership of something like two hundred, and we sometimes try to form and influence legislation, both local and national. We believe that forming or attempting to form public sentiment through our association is advisable and that the future press committees should be requested to work along this line.

The National Hardware Association should have an opinion on all national legislation of a commercial and economic character and this opinion should be expressed through your Press Committee in the trade magazines and newspapers. Action should have been taken on the pure food bill, railroad rate law, antimonopoly bill, postal parcel extension and Government ownership. There is probably no association of two hundred members more directly interested than ours in the tariff question, which is being agitated and may soon again be a vital political issue. Yet the Chairman of your Press Committee does not know the views of the Hardware Association on this purely economic question that never should have been a political question at all.

#### Heavy Hardware Matters.

Several meetings were held by jobbers especially interested in Heavy Hardware, and many matters of special interest to the branch were thoroughly discussed. Bar Iron and Horse Shoes were lines to which considerable attention was devoted. Representatives of several manufacturing concerns listened to suggestions of the jobbers regarding the prevailing discounts and terms on which Heavy Hardware is sold, special argument being made for shortening the period of time in which purchases must be made to secure rebate. Complaint was also made that certain large manufacturers have not been strict in confining their business to wholesalers or even quantity buyers, but have accepted, if not solicited, less than carload orders from comparatively small trade. The representatives present expressed themselves as personally in favor of accepting in a general way the suggestions offered by the jobbers, but recommended that the committee should secure the approval of other manufacturing concerns, so that whatever changes were made would be uniform.

### Introducing New Goods.

"The best method of introducing new goods to the trade" was a subject announced for discussion at the joint session Wednesday morning. Owing to the length of the programme there was time to hear but one speaker, E. B. Pike, Pike Mfg. Company, whose crisp and suggestive remarks were greatly enjoyed. Mr. Pike occasionally expressed himself in a semihumorous and ironical vein, winding up with the conclusion that the wholesale merchants should introduce new lines for the manufacturers. The gist of his address, however, was of a practical and helpful nature, based on his own wide experience and successful efforts along the line of his subject. He warmly complimented Mr. Bush, whose suggestions regarding manufacturers furnishing retailers and their clerks with more definite information regarding their goods had just been heard, and went on to say:

The idea of having the label on the goods that we manufacture describing in the first place what the goods are, what they are for and how to use them is a good idea. After many years of labeling goods "The best in the world" and all that sort of thing, it has occurred to us the last two years that we have had very little success in that way of describing goods. We are putting on our goods to-day briefly what the goods are for and how to use them, so that they will be plain for the salesman as well as the buyer. We have found it necessary to advertise our goods to sell them. We have also found it necessary to sell our goods to advertise them. We understand perfectly and I think every manufacturer here believes that the

#### Wholesaler is the Natural Distributer

of the manufactured goods and we wish that they would distribute our new goods for us; but our experience has been that Mr. Wholesaler will not distribute the goods generally until there is a demand created for them—that he leaves it to the manufacturer to create the demand. And we can approve another suggestion of Brother Bush, that men of experience,

#### Men from the Factory, Should Be Sent Out

to the retailer to tell the retailer's clerks and the retailer himself what the goods are and to explain how they are made. We are ourselves sending out to-day men to the consumer in introducing Wheels and Oil Stones at a cost of three or four times the profit, and sometimes the expenses of the month are 140 per cent. for selling the goods—for the salesman going from factory to factory and from user to user and taking the retail dealer and his salesman with him and educating them about the goods.

#### Hardware for Premium Purposes.

In the annual report of the secretary of the National Hardware Association, which with President Wright's address was printed in full in last week's issue of *The Iron Age*, reference was made to the sale of Hardware articles for premium purposes. The opinion was expressed that such goods are sometimes sold to parties giving them away at a less price than the jobber must pay for them, and as they cost those who receive them practically nothing their legitimate sale was necessarily reduced thereby. It was generally admitted, however, that jobbers themselves were in part to blame, as some members of the association are known to have sold goods for the purpose mentioned, and it was recognized that until such practice was discontinued complaint could not consistently be made to manufacturers.

#### Postal Questions.

Postal problems and particularly the questions of 1-cent letter postage and parcels post received somewhat less attention than at last year's convention for the reason that the attitude of both associations in favor of the former proposition and against the latter is pretty generally recognized. The subject was discussed, however, in all its aspects in a very able address delivered by C. W. Burrows, Cleveland, before a joint meeting of manufacturers and jobbers. Mr. Burrows has made a special study of postal problems and is a forcible and entertaining speaker, so that his address, containing much carefully compiled information, was listened to with great interest. The following resolutions were adopted by the National Hardware Association on proposal by Geo. T. McIntosh, Cleveland:

#### ONE-CENT LETTER POSTAGE.

*Whereas*, The expense of carrying and delivering first-class mail matter is  $\frac{3}{4}$  cent per  $\frac{1}{2}$  oz.; and

*Whereas*, The charge of 2 cents by the Government is disproportionate to price charged on other classes of mail matter; therefore,

*Resolved*, That we protest against this unjust discrimination and respectfully ask our Senators and Representatives to favor a reduction of first-class mail matter to 1 cent per  $\frac{1}{2}$  oz.

#### PARCELS POST.

*Whereas*, Certain parties are endeavoring to have established a parcels post, which will serve their own selfish interests and practically ruin the business interests of hundreds of thousands of retail merchants scattered throughout the country; therefore,

*Resolved*, That the National Hardware Association protests against any such measure and urges our members of Congress to defeat efforts which are being put forth in the interests of mail order houses.

#### Syndicate Buying.

A subject which occupied perhaps as much of the attention of the jobbers as any was that of syndicate buying. The New York syndicate buying houses were in attendance at the convention, and some of them had official conferences with representatives of the association. The especial point aimed at in the plan pursued by the Jobbers' Association is to have the syndicate buyers act in behalf only of the large houses, and as a result the names of a number of smaller jobbers have been taken from their lists. This process was carried still further at the Atlantic City meeting, so that the lists of the houses represented by the syndicate buyers are now understood to be substantially approved by the association.

#### Contributions to Jobbers' Catalogues.

As stated in the annual address of President Kretzinger, the old question of making direct or indirect contributions toward the expense of getting out jobbers' catalogues has again been presenting itself to some manufacturers. The following resolution was adopted by the manufacturers, reaffirming their strong position against this practice and calling on the jobbers to state their position as a body with reference to this subject:

*Whereas*, This association has repeatedly approved of the discontinuance of contributions by manufacturers to jobbers toward the expense of publishing jobbers' catalogues; and

*Whereas*, Requests continue to reach manufacturers from some jobbers for contributions directly or indirectly,

*Resolved*, That we respectfully request the National Hardware Association, now in session, to adopt a resolution expressing the sentiment of its members upon this most important subject.

#### Terms of Payment.

Less than was expected was heard regarding the movement on the part of manufacturers of certain lines of goods toward less liberal terms of payment on bills of merchandise. The manufacturers referred to recently announced that in the future their terms will be 30 days net, 1 per cent. 10 days, instead of 60 days, 2 per cent. 10 days as heretofore, believing perhaps that their movement would find favor and would attract a considerable following from producers of other Hardware lines. The proposed change, however, was not acceptable to the jobbing trade, who instituted a strong campaign against it both by personal correspondence and through their association, arguing that the cash discount was taken care of by the manufacturers in making their prices, while it was not practicable for them, the jobbers, to alter their terms to the retail trade. Thus they claimed that the proposed change would be a hardship to them, cutting off profits which they could not recoup, and, forestalling possible discussion, they put their case so strongly to their manufacturing friends that a large majority had given written assurance of their disposition to stand pat before the convention met. It developed, however, that manufacturers had cause to complain that their present terms were very liberally interpreted by the jobbing trade, and the following resolution, favoring strict and uniform enforcement of these terms, was adopted:

*Whereas*, There has been much complaint among our membership relative to the abuse by customers of the usual terms of 30 or 60 days or 2 per cent. for payment within 10 days from the date of each invoice, and numerous requests for deferred date payments, many specific complaints stating that some customers deduct the cash discount of 2 per cent. when remitting in 30 or even 45 days; and

*Whereas*, Some of our members urge a reduction in the premium for prompt payment,



*Resolved*, That this association recommend to its membership the continuance of the present terms of 30 or 60 days or 2 per cent. for payment within 10 days from the date of each invoice, but that these terms be strictly and literally interpreted.

*Resolved, further*, That a copy of these resolutions be forwarded to the National Hardware Association, now in session, with the request that official action be taken thereon.

#### Labor Problems.

The following resolution demanding protection for manufacturers and employees against lawless acts on the part of labor organizations was passed by the American Hardware Manufacturers' Association.

*Whereas*, The President of the United States has seen fit to rigidly enforce all laws pertaining to the control of combinations of capital into so-called trusts, maintaining that such combinations of capital are in restraint of trade, and as such are a menace to the industrial welfare of our country; and

*Whereas*, Organized labor presents a combination of labor in restraint of trade and as serious a menace to the industrial welfare of our country as any combination of capital could possibly represent; be it

*Resolved*, By the American Hardware Manufacturers' Association, composed of employers of labor, that the attention of the President of the United States and Congress of the United States be called to this growing danger to our industrial institutions, and that the President of the United States be requested to urge upon Congress the necessity and justice of enacting legislation which will enable the employer to be free from the boycott, sympathetic strike and such un-American methods as now obtain in the shape of personal violence and picketing of plants where strikes are in progress; be it further

*Resolved*, That the American Hardware Manufacturers' Association firmly believes in the right of employers and employees to contract with each other without the intervention of the Government as to hours of labor, and we denounce all efforts by the labor lobby, now maintained at the seat of the Government, to restrict the hours of labor in any industry by law, or to deprive the employer of the only means of protection against unfair interference with his business—viz., the right of injunction.

#### Catalogue House Question.

The last session of the National Hardware Association was an open one and was devoted to the catalogue house question. S. Norvell, chairman of the Catalogue House Joint Committee, took charge of the meeting and after reporting the work of the committee in an informal way called on representatives of the National Retail Hardware Association who were present to discuss various aspects of the subject. In conclusion Mr. Norvell restated the purpose of the committee, announced a year ago, to issue a key from which buyers of Hardware could learn the position on this question of manufacturers whose goods were offered them. He explained that the publication of such a key had been delayed in the hope of adding to the list of manufacturers who do not sell the catalogue houses and added that the committee would keep well within their legal rights. Nothing would be done without competent legal advice. Mr. Norvell's report and remarks on the subjects referred to were favorably received and warmly applauded. His references to the good which has been accomplished by the committee were especially appreciated.

#### DELAYED FREIGHT DELIVERIES.

Probably the subject most widely discussed by both manufacturers and jobbers was the matter of delayed freight deliveries. That great abuses in this direction have been suffered by all branches of trade is unquestionably true. During the past summer it has been brought forcibly to the attention of the Hardware trade by John Donnan, W. S. Donnan Hardware Company, Richmond, Va., who has also enlisted strong co-operation from those handling other lines of merchandise. The course generally recommended has been to seek redress through legislation empowering the Interstate Commerce Commission to regulate the matter, but this course was not favored by the Transportation Committee of the National Hardware Association, as will be seen from their report, most of which is given below:

During the past year a matter of great importance to all shippers in all lines and in all sections has come before your committee—the matter of delayed shipments. You no doubt are all familiar with the resolution passed by the Southern Hardware Jobbers' Association, as well as the resolution passed by the American Hardware Manufacturers' Association at its meeting held at Hot Springs, Va., June 12 to 15 of this year. The chairman of your committee had some correspondence with your

secretary-treasurer as well as John Donnan of the W. S. Donnan Hardware Company, Richmond, Va., the author of the resolution passed by the Southern Hardware Jobbers' Association, in reference to this matter, but no action was taken by your committee.

Mr. Donnan's resolution calls for the passage of a bill by Congress empowering the Interstate Commerce Commission to issue a rule to all railroads requiring a time limit on all interstate shipments, penalizing the railroads for unreasonable delays in delivery of goods.

#### Commission Should Not Be Given Further Power.

While it is well known by the members of our association that the railroads throughout the country do not give delivery on shipments commensurate in time with the remuneration they collect for handling such shipments, your committee does not feel that the Interstate Commerce Commission should be given any further powers than those already invested in them. We, however, do feel that something can be done in the way of compelling the railroads to give better service, and feel that this is a matter which should be taken up and discussed by the entire membership of our association.

Your committee is opposed to the enactment of any law giving the Interstate Commerce Commission further powers than those already invested in them, or empowering them to issue a ruling such as is proposed in Mr. Donnan's resolution. We have no right to place in the hands of any commission or set of men in this country the power suggested. They are the

#### Appointees of a Political Power.

and who knows into whose hands this tremendous power may be placed in future years. Under our political system it is not hard to conceive political questions arising under which the Interstate Commerce Commission might become a controlling factor in a political campaign. The efforts of the Interstate Commerce Commission to secure additional authority have been persistent and systematic. There is no doubt that they have had a powerful influence upon public opinion which would have been impossible had the official source of the agitation been apparent. No sane man believes that a politically created body will ever be wholly controlled by nonpolitical considerations. There is a vital principle at stake in placing this matter in the hands of the Interstate Commerce Commission, and we would earnestly urge conservative and cautious action in regard to it.

#### Redress Should Be Sought in Federal Court.

We, however, feel that a law should be enacted penalizing the railroads for delays in delivery of shipments, and in case of delayed shipments if the railroad refuses to pay the fine as prescribed by law the complainant to bring suit in the federal court. This court is not interested in the matter except to hear the case without bias for or against either side, and upon the facts and the law of the case as presented at the hearing renders its decision.

It would seem as though a law could be enacted imposing a fine for delayed shipments along the lines indicated by Mr. Donnan, and in case of delayed shipments the consignee to make demand upon the railroad for refund, and in case of the railroad's refusal to pay same the consignee to have the right to carry the matter into the Federal courts. There is no question as to the fairness of the proposition, and we feel that it would be much better to give the Federal Court power to enforce any law that might be enacted than to place the power of enactment in the hands of the Interstate Commerce Commission.

#### An Interesting Pamphlet.

All of our members have no doubt been in receipt of and have read with considerable interest the pamphlet recently issued by T. Payton Giles and John Donnan of Richmond, Va., entitled "An Injustice: Its Cause and Results, With Some Facts and Figures Bearing Thereon; Also the Only Practical Remedy Therefor." In this pamphlet these gentlemen give facts and figures covering deliveries and delays on interstate shipments which are astounding to us all; also the remedies therefor. If you have not studied this pamphlet carefully, we would advise that you do so.

While your committee is in full accord with Mr. Donnan's views with reference to compelling the railroads to give the shippers of this country better service and in advocating by all lawful means the enactment by the Congress of the United States of an act requiring a time limit on all interstate business, they do not feel that the power of enforcing such an act should be placed in the hands of the Interstate Commerce Commission. By placing this power in the hands of the Interstate Commerce Commission it would bring to the commission an overwhelming mass of work which that body might attempt to perform, but could not accomplish.

**Mr. Donnan's Address.**

John Donnan, whose able and energetic work was referred to by the Transportation Committee and whose pamphlet, "An Injustice," &c., was brought to the attention of our readers some months ago, addressed the jobbers at length upon this subject, stating what had been done and what it is proposed to do, at the same time forcibly answering suppository arguments offered against his position. He called upon merchants and manufacturers alike to take vigorous action and rid the mercantile world of the grievances so long endured. At the conclusion of his address a committee was appointed to draft a resolution expressing the jobbers' attitude on the subject, and its report given below was adopted:

*Whereas*; The business interests of this country are suffering severe hardships and delays in the delivery of goods in transit, and whereas we have after years of patient and persistent effort failed to secure efficient service at the hands of the railroad companies; and

*Whereas*, Conditions have reached the point which necessitates our taking such vigorous action as will bring permanent relief; therefore be it

*Resolved*, That this association pledges itself to advocate and forward by all lawful means within its power the enactment by the Congress of the United States of an act to empower the Interstate Commerce Commission to issue an order to all railroad companies requiring a time limit for delivery of all shipments, such time limit to be decided by the Interstate Commerce Commission on all interstate shipments based on length of haul. The railroads to be subject to a penalty to be determined by the Interstate Commerce Commission for each 24 hours' delay in delivery beyond the time prescribed by the Interstate Commerce Commission.

**Manufacturers' Resolution.**

The Manufacturers' Association adopted the following resolution, reaffirming their attitude on this subject as expressed in the resolution passed at the Hot Springs convention in June:

*Resolved*, That we favor the enactment by Congress of further legislation empowering the Interstate Commerce Commission to require transportation companies to make reasonable rates for reasonable service, and empowering the said commission to enforce proportionately low rates when the service in transporting merchandise is unreasonably slow.

**ENTERTAINMENT.**

The opportunities afforded by the convention for getting better acquainted and establishing relations of a personal character were made the most of. This feature of the occasion was recognized as equally important with the business proceedings and the greatest cordiality prevailed. The easy intermingling of comparative strangers was especially noticeable and it is safe to say that many acquaintanceships were formed which will ripen into lasting friendships, as indeed has always happened at previous conventions. The presence of an unusually large number of gracious and charming ladies added greatly to the warmth of the social atmosphere in the hotel as well as to the pleasure and brilliancy of the more formal social functions. Of these there was no lack, the arrangements occupying every evening during the convention.

**Reception.**

The reception tendered by the manufacturers to the jobbers has come to be regarded as an annual feature of these gatherings. It occurred this year on Wednesday evening and served as an excellent introduction for the festivities to follow, affording just the needed opportunity for renewing old acquaintances and forming new ones and bringing together all present on a footing of congeniality and social enjoyment. Although admirably conceived and carried out with scrupulous attention to the smallest detail the affair was not so formal as to assume a stiff or perfunctory character, thus reflecting great credit on the judgment and tact of those having the arrangements in charge. By a fortunate arrangement of the floor of the hotel it was possible to conduct the reception in a room well adapted to the purpose, which adjoined the main corridors, thus permitting both ladies and gentlemen to circulate with the greatest freedom and ease. An excellent buffet supper was served and good music was furnished by the hotel orchestra, which at the close of the reception proper played for dancing, which was participated in by a large company. The receiving line

was made up of the officers and ex-presidents of both associations, the officers and representatives of The National Retail Hardware Association and their ladies.

**Card Party.**

The euchre party has come to be anticipated as one of the most pleasurable events of the convention week, and this year's renewal was participated in with the greatest enthusiasm. Unstinted credit for the brilliant success achieved must be accorded to Mrs. G. W. Trout of Chicago, who took entire charge of the affair at the urgent request of the Entertainment Committee. She not only showed herself alive to every problem that must be met, but fully equal to them, and with her gracious tact and ready wit completely dominated the occasion to the delight of all present. Mrs. Trout was ably assisted by a corps of ushers, who aided her in marshaling the forces and keeping score. Although upward of 300 took part in the game there was no confusion, and points were scored and prizes awarded with perfect fairness. The interest of the evening centered in the contest for first prize, a handsome mahogany hall clock valued at \$300 and donated by the Pittsburgh Steel Company. It was won by Chas. Graham of Pittsburgh. There were many other valuable prizes, however, so many in fact that nearly every one playing was able to carry away some souvenir. The beautiful playing cards used, as well as the score cards, were furnished by the American Sheet & Tin Plate Company. Pencils were provided by Garland Nut & Rivet Company. North Bros. Mfg. Company supplied ice cream, which was served in the course of the evening with cake furnished by the hotel management. Mrs. H. H. Rudd, Cleveland, the Misses Reynolds, Dixon, Ill., and A. H. Chamberlain of *The Iron Age*, New York, gave pleasure by responding to requests to sing. Instrumental music was rendered by the Marlborough-Blenheim orchestra. The Ladies' Social Committee having charge of the prizes was made up as follows: Mrs. George W. Trout, Chicago, chairman; Mrs. H. A. Taylor, Chicago; Mrs. H. W. Avery, Cleveland; Mrs. E. T. Walker, Philadelphia; Miss Supplee, Philadelphia; Mrs. C. D. Clark, Peoria; Mrs. C. C. Philbrick, Grand Rapids; Mrs. W. L. Harvey, Chicago; Mrs. Thomas Usher, Chicago; Mrs. D. H. Merriman, Chicago; Mrs. J. C. Birge, St. Louis; Mrs. W. M. Supplee, Philadelphia; Mrs. C. A. Earl, New Britain; Mrs. J. D. Moore, Birmingham; Mrs. A. C. Albrecht, Philadelphia; Mrs. C. W. Asbury, Philadelphia; Mrs. S. Norvell, St. Louis; Mrs. J. Richens, Auburn, N. Y.; Mrs. E. C. Neal, Buffalo; Miss Sanford, Chicago; Miss Disston, Philadelphia; Mrs. T. J. Fernley, Philadelphia; Miss Fernley; Mrs. F. P. May, Washington; Mrs. H. H. Rudd, Cleveland; Mrs. J. C. Kroner, La Crosse; Mrs. J. Hardy, Toronto; Mrs. E. M. Kemp, Chicago; Mrs. J. G. Bauer, Topeka; Mrs. G. T. McIntosh, Cleveland.

Following is a list of the manufacturers donating prizes:

American Sheet & Tin Plate Co.	Lufkin Rule Co.
Avery Stamping Co.	Lockwood Mfg. Co.
American Wringer Co.	Landers, Frary & Clark.
Atha Tool Co.	McCaffrey File Co.
American Fork & Hoe Co.	Mack & Co.
E. C. Atkins & Co.	Manning, Bowman & Co.
American Axe & Tool Co.	David Maydole Hammer Co.
Geo. H. Bishop & Co.	Chas. Morrill.
Bemis & Call Hardware & Tool Co.	Miller Bros. Cutlery Co.
Bronson-Walton Co.	Meriden Cutlery Co.
Boss Washing Machine Co.	National Specialty Mfg. Co.
Bullard Automatic Wrench Co.	National Enamelling & St'ping Co.
Beiding-Hall Mfg. Company.	North Bros. Mfg. Co.
Chapin-Stephens Co.	National Sweeper Co.
John Chatillon & Sons.	Ohio Tool Co.
Corbin Screw Corporation.	Oneida Community.
Cleveland Twist Drill Co.	Pittsburgh Steel Co.
Corbin Cabinet Lock Co.	Chas. Parker Co.
Caldwell Lawn Mower Co.	Pike Mfg. Co.
Clyde Cutlery Co.	Pullman Mfg. Co.
Challenge Cutlery Corporation.	Fayette R. Plumb, Incorporated.
Caldwell Mfg. Co.	Rochester Stamping Co.
Chantrell Tool Co.	Romer Axe Co.
Diamond Saw & Stamping W'ks.	Reading Hardware Co.
Dana Mfg. Co.	S. L. & G. H. Rogers Co.
Henry Disston & Sons.	O. P. Schriver & Co.
Dover Mfg. Co.	Wm. Schollhorn Co.
Enterprise Mfg. Co.	H. D. Smith & Co.
Garland Nut & Rivet Co.	Savage Arms Co.
Hamilton Rifle Co.	Supplee Hardware Co.
Hopkins & Allen Arms Co.	Simonds Mfg. Co.
Heller Bros.	Wm. Vogel & Bros.
Humason & Beckley Mfg. Co.	United States Stamping Co.
Irwin Anger Blt Co.	Whitman & Barnes Mfg. Co.
Keuffel & Esser Co.	Wood Shovel & Tool Co.
Korn, Geo. W., Razor Mfg. Co.	Samuel Winslow Skate Mfg. Co.
Adolph Kastor & Co.	L. & I. J. White Co.
Lamson & Sessions Company.	Walden Knife Co.
Lovell Mfg. Co.	Winchester Repeating Arms Co.



### The Banquet.

As usual, the banquet was held on the evening of the closing day of the convention. It was laid in the handsome dining room on the Marlborough side of the hotel which was elaborately decorated for the occasion. Original and tasteful menus were provided, and the dinner and service were of the best. A feature of the banquet was the use of small tables at which the seating was arranged as far as possible with a view to congeniality by E. S. Jackson, the hard working chairman of the Banquet Committee. The hotel orchestra discoursed music and songs were sung most acceptably by several of the ladies. W. S. Wright, the genial and popular president of the National Hardware Association, acted as toastmaster, and introduced, in turn, C. W. Asbury, president-elect, and F. S. Kretsinger, the retiring president of the Manufacturers' Association. Happy remarks were made by both these gentlemen, after which Brace Hayden, vice-president of the National Hardware Association, was called upon for reminiscences of the San Francisco earthquake. His forcible, clear headed account of the disaster, which included in its gulf the well-known house with which he is connected was intensely interesting, and was listened to with the closest attention. The personal popularity of Mr. Hayden was quickly apparent, but the frequent outbursts of applause which greeted his graphic account of the heroism and pluck of his fellow townsmen and their indomitable courage in taking up the work of rebuilding were ample evidence of the deep and generous sympathy of the whole trade for their brothers in the stricken city. That such sympathy had long since been manifested in the most practical way was shown by Mr. Hayden's feeling tribute to the outpourings of generosity and offers of assistance which, he declared, the people of San Francisco would never forget. The last speaker of the evening was R. O. Moon, Philadelphia, member of Congress, whose subject was "Commerce and Legislation."

### Souvenirs.

Among the souvenirs distributed by various manufacturers were noticed the following:

LUFKIN RULE COMPANY, Saginaw, Mich.: Steel tape in oxidized metal case.  
J. D. WARREN MFG. COMPANY, Chicago, Ill.: Copy of "The Foolish Dictionary."  
RUSSELL & ERWIN MFG. COMPANY, New York: Thermometer.  
MANNING, BOWMAN & CO., Meriden, Conn.: Ash tray.  
UNITED STATES GRAPHITE COMPANY, Saginaw, Mich.: Lead pencils.  
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.: Puzzle.  
GEORGE W. KORN RAZOR COMPANY, Little Valley, N. Y.: Razor.  
HOPKINS & ALLEN ARMS COMPANY, Norwich, Conn.: Colored picture.  
NATIONAL ENAMELING & STAMPING COMPANY, St. Louis Branch: Enameled pails and basins.  
HARDWARE DEALERS' MAGAZINE, New York: Automatic telephone card index.  
AMERICAN SHEET & TIN PLATE COMPANY, Pittsburgh, Pa.: Box of cigars.  
LIVERIGHT BROS., Philadelphia, Pa.: Manicure file in leather case.  
IVER JOHNSON'S ARMS & CYCLE WORKS, Fitchburg, Mass.: Desk calendar.  
MCCAFFREY FILE COMPANY, Philadelphia, Pa.: Manicure file in leather case.  
BOSS WASHING MACHINE COMPANY, Cincinnati, Ohio: Puzzle.  
PHILADELPHIA LAWN MOWER COMPANY, Philadelphia, Pa.: Dating stamp, blotting pad and desk eraser.  
NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y.: Pair of clippers.  
NICHOLSON FILE COMPANY, Providence, R. I.: Manicure file in sterling silver case.  
L. & I. J. WHITE COMPANY, Buffalo, N. Y.: Watch fob.  
JOHN CHATILLON & SONS, New York: Miniature sharpening steel.  
LAWSON MFG. COMPANY, Chicago, Ill.: Stick pin.  
SUPPLEE HARDWARE COMPANY, Philadelphia, Pa.: Pennsylvania Lawn Mower button.  
AMERICAN STEEL & WIRE COMPANY, New York: Paper cutter.  
CARVER FILE COMPANY, Philadelphia, Pa.: Manicure file in leather case.

### Atlantic City Next Year.

Much gratification was expressed at the convenience of the location, the excellence of the hotel accommodations and the facilities for holding social functions and conducting the meetings. Although this was the third occasion of convening in Atlantic City, sentiment was almost unanimous in favor of returning there next year, which it was ultimately decided to do.

### L. & I. J. White Company's Exhibit.

Much interest was attracted by a handsome traveling display of tools installed in the hotel by L. & I. J.

White Company, Buffalo, N. Y. The display which has previously been illustrated in *The Iron Age* is an exceedingly elaborate and effective one, occupying a specially constructed oak case with glass front and sides and lighted by electricity. The dark green lining of the case sets off to excellent advantage the bright blades and polished handles of the tools. Two large trays of chisels included in the display were donated by the company as euche prizes.

### PRESIDENT KRETSINGER'S ADDRESS.

The annual address of President Kretsinger, delivered at the opening meeting of the American Hardware Manufacturers' Association, referred to several questions of vital interest to the members. He said:

I have read with especial interest the report of the proceedings of the June convention, and have noted with pleasure the acts of the association in the matter of addresses of our members, which were interesting and instructive; and in the resolutions adopted, which were timely and proper. That the subject of conduct of contracting parties was for the second time (the first time four years ago) presented to us by a very able and interesting address on "Integrity of Contracts," indicates plainly that it is a subject often brought to the attention of many of our members, and it suggests a thought that possibly others outside of this body, merchants as well as manufacturers, buyers as well as sellers, who are honestly disposed, are equally interested in having clearly defined contracts and agreements conscientiously respected.

### Classification of Freight.

There is another subject that is of more than ordinary interest to the average, and particularly to the long distance shipper and receiver, and that is the classification of freight by transportation companies. In no way are we groping so in the dark in managing our respective institutions as in the freight department, for, except in very large concerns, whose tonnage is so great as to be urgently sought for by even trunk lines and whose business justifies the maintenance of a freight department with an expert manager, I venture to say that few shippers or receivers have even a faint knowledge of advantageous classification of articles and actual through rates on shipments to distant points. What with the official, Southern, Western, and many other established classifications covering uncertain geographical territory wherein articles are classed under many headings, even in each book, and often in an obscure way for the use of experts and favored shippers only, it is almost a mental impossibility to determine what are correct and fair through rates on shipments going over several roads.

It is only when business is lax and competition keen among carriers (and this is a rare condition) that we come to our rights in the matter of rates through favorable and proper interpretation of classification of our products. No one of us, I venture to assert, begrudges remunerative freight rates nor fairly earned dividends to investors in transportation stock, but the multiplicity of classification forms, maintained so persistently, is a relic of the past, and is apparently for the purpose of blinding the eyes of payers of freight.

We may not be able to agree that it is possible or even desirable for the Government to determine all freight rates, for in so doing the shippers' condition might be worse than it now is; besides, even railroad owners have some rights. Nor may we come to one mind and agree that the Government should exact from transportation companies actual delivery dates of all freight accepted by them, irrespective of kind or quantity of articles in each shipment, distance and grades over which they are hauled, and many other conditions which might be important factors in fixing periods alike just to shipper and carrier. But in the matter of classification of articles of freight I am unable to understand, and no one has ever given me light to see, why iron, leather, lumber, &c., in whatever stage of manufacture, are not the same, whether carried in cars in Massachusetts or Louisiana, in Minnesota or Georgia, or anywhere else or in any direction.

### With One Uniform Classification

of articles in use by all lines over the country, irrespective of freight rates—which must of necessity differ, because of length of lines, grades, tonnage and many other reasons affecting each particular railroad company—shippers and receivers could determine with some degree of intelligence and certainty the cost of sales and purchases at destination.

At some time in the near future I hope that this association will seriously consider and express itself on this subject, and that we can have the earnest support of other similar organizations of manufacturers and job-

bers, to the end that at no distant day some satisfactory results may come of it.

#### Contributions to Jobbers' Catalogues.

The evil, that of being invited, and in many instances very urgently importuned, to pay for cost of catalogues issued by jobbers has undoubtedly diminished since we took action by resolution on this subject four years ago, although there may be isolated cases now where some of you may still be pressed to hand out your substance in fear of losing a customer. This subject has recently been presented to us by one association in a new form, called "Loose Leaf Catalogues," but happily for all concerned it is accompanied with a positive and official declaration that the manufacturers are not to be taxed, are not to be required or even requested to supply gratis either money or catalogue leaves. This independent position taken by our friends is commendable and most gratifying, for both they and we are relieved of much embarrassment, and what at times has even been humiliation. It is earnestly to be hoped that neither demands nor invitations for contributions of this nature will again be received by any of us.

#### Our Relations with the Jobbers' Associations

are harmonious and cordial, and so they should be, for their members are not only distributors of our product, our good customers, but in most instances, and particularly where we have had an opportunity of meeting them as we do at these conventions, they are our personal friends, whom it is a pleasure to know and to meet socially quite as well as to sell them our wares.

#### The Retail Associations.

The same close relations which have grown up between us and the jobbers can be profitably extended to the retailers of Hardware, for they are now wonderfully well organized in 23 State and interstate associations and also under a National Association, all of which convene annually, and they have frequently extended cordial invitations to manufacturers to be present on these occasions. Their membership includes the most intelligent, progressive class of retailers and business men that are found in any occupations and in any communities. These gentlemen are the mediums by which our products are finally marketed, for they come in direct contact with the consumers, and we can well afford to avail ourselves of the excellent opportunities freely offered us to meet them.

#### Association Legislation.

We have been in the past, and doubtless will be in the future, confronted with questions by our friends which it will not be possible or wise to legislate upon, for, because of the wide range of our industries and the difference in the character of our products, it is not possible to declare our views or our attitude as an association. Such questions can well be left for the buyers and sellers who are most particularly interested, to adjust among themselves.

This association was organized quite as much for social as for business purposes, to foster and encourage cordial relations with the trade, and not only has this been successfully accomplished, but we have profited no little by our acquaintance and contact with each other.

Coming together, as we do, making an endless variety of Hardware articles, with establishments located in different sections of this great country and working under many and different conditions, we may yet have many interests in common and we can, beyond question, consult together and act to our mutual profit and to the advantage of our friends the distributors.

#### ADDRESS OF E. M. BUSH.

On being introduced at the opening meeting of the National Hardware Association E. M. Bush, Evansville, Ind., president of the National Retail Hardware Association, delivered an able address, touching especially on what the manufacturers and jobbers can do to help the retail merchant. His remarks were listened to with great attention and were the subject of much favorable comment, especially on the part of the manufacturers, many of whom expressed the belief that they would profit by his practical suggestions. Mr. Bush spoke in part as follows:

When upon former occasions our national officers have come before you it has been principally to discuss the catalogue house question and prospective parcels post legislation. I shall touch these subjects but briefly, not that we consider either of them a dead issue, for that the educational influences and agitation of both questions have born fruitage we are fully convinced by the events of the past year. Let me rather in a few words try to show you the

#### Every Day Environment of the Retailer

—contrast his surroundings and opportunities with yours in your larger sphere of manufacturing and jobbing business life—and endeavor if I may to make two or three suggestions which shall perhaps be mutually helpful. I cannot hope to bring anything new to you in these suggestions—this ground has been so thoroughly threshed over that little new is left. But so auspicious an opportunity for a few words on the subject leads me to hope that even a repetition, if brief, will bring about some good results.

In the centers of trade—cities of 20,000 and upward; often, too, in small places—are retailers doing a business which runs up into six figures annually. But with a vast majority of retailers whose stock embraces, besides legitimate Hardware, Stoves, Agricultural Implements, Vehicles, Paints and numerous other lines that in this day fill a general Hardware store, the annual sales run from \$10,000 to \$60,000. It is to retailers of this class, who also largely predominate in the State retail Hardware associations, that I would call your attention. Few of these merchants are brought in direct contact with the heads of jobbing houses; even less rarely do they meet the manufacturers of the goods they sell.

#### Merchants of this Generation Go Seldom to Market.

for the market comes to them in the traveling salesman of the jobber, in the Stove, Implement and Paint representative of the manufacturer who sells direct to the merchant. Is it strange, then, that there has existed in the past no greater feeling of community of interest between you and these retailers? And—pardon me, gentlemen—have not manufacturers and jobbers been inclined to regard the retailer's interests as of slight consequence? In reality retailers are the secondary roots of your tree of prosperity, and must be nourished and nurtured by fair, just and considerate treatment, for this glorious tree will suffer severely if these secondary roots do not receive proper consideration.

The lack of this feeling of mutual interest has been accentuated in instances where the merchant has seen in the catalogues of the mail order houses goods of a manufacturer which he has for years displayed, talked, sworn by and sold, so priced that he has cut out competition. Happily, these times and conditions are passing—largely through the advent of the Retail Hardware Associations—which by this act of association have won recognition of the fact that they are a factor worthy of consideration in to-day's commercialism, and which afford in their conventions opportunities for the heads of firms to meet the distributors of their goods and products.

#### This Acquaintanceship Naturally Clears the Air.

matters are better understood, differences are more readily adjusted. While a few years ago manufacturer and jobber thought only of their own troubles, they have learned through association efforts that the retailer, too, has his troubles—some of them unconsciously or thoughtlessly brought about by the very manufacturer whose goods he is pushing. The retailers rejoice to-day in the knowledge that a great number of manufacturers and nearly all jobbers—all in this association—are working in unison with him for improved conditions, which we know are coming about. Are we not justified in a small feeling of pride in the knowledge we have, that the position we have gained, has been attained by methods both sane and conservative? For well we know the prejudice, almost distrust, which existed in some minds in the early days of our association life.

Let me suggest that whenever possible you attend with your representatives those conventions where displays of your wares are made, that you encourage criticism and suggestions from the retailer, for who knows better than he who comes in direct contact with the consumer what the public asks in an article and what changes and improvements will meet its demands? Learn from the retailer what the public wants, for he has his finger on the public pulse.

#### Many Little Sales.

Next, let me bring to your notice the vast difference in the matter of sales between your business and the retailer's. Few manufacturers can conceive of the many little sales of 10, 15, and 20 cents that go to make up the day's business of a retailer, since the most of your transactions run into hundreds and thousands of dollars and concern ton and carload and trainload in quantity.

The retail merchant must of necessity be accessible to every customer who enters his store, and it is an everyday occurrence for customers to come many times to the proprietor himself for their little purchases. You say, "Turn such sales over to your clerks." You can't afford to do what will probably offend your customer and lose to you his trade, which, small to-day, may be large to-morrow. A retailer's trade is limited, he must



keep it—it is largely local—while yours is the entire country and perhaps the wide world. I bring this volume of small sales to your attention, and the valuable time often consumed in making them, that you may be more liberal when estimating the profits that are legitimately the retailer's.

#### A Complaint Often Heard

is that the man behind the counter does not exhibit enthusiasm in talking goods, lacks a knowledge of how they are made, of what material, what advantages they have and all the uses to which they can be put, &c. Let me ask you manufacturers what you have done to impart this information to us? We receive from you, inclosed usually in a neat, tasty box or package distinctly marked perhaps, with name, number and size upon it, a Chisel, a Rifle, a hundred other things. You know its merits, you consider it the best of its kind or you wouldn't send it out, why don't you tell us wherein its especial merit and advantage lies?

How is a retailer with hundreds and thousands of other articles upon his shelves to talk with knowledge, with an air of conviction, with enthusiasm, when his only guide is the name, number and size of that Plane, Saw or Chisel? That is all you have told him of it, and with the myriad of other articles about he has little time to study up each especial merit.

#### Why Not Help Us to Know More About You and Your Goods?

Tell us for how many years your Saw or Chisel has been made, of what sort of steel or other material, its improvements, how to use to best advantage, exact dimensions, why you know it to be better than its rival in the trade. The maker of an article should certainly know best the merits of his product. Print this information upon a slip to be inclosed in box or pasted upon the package. This slip will better enable proprietor and clerks to sing your praises and talk the merits of your goods all over this broad land.

One of the strong points of the cataloguer is the complete description he gives of even the most inferior articles. However poor and diminutive the cut may be, these full descriptions in print make an impression that sells an article which, if seen and handled, would probably not have been sold, but the minute description does the work.

Many clerks lack the intelligence, inclination or versatility to see and grasp the talking points of an article. These need the information I ask for in suggesting this descriptive card. Salesmanship in our stores would rank higher did not jobbers and manufacturers as soon as our clerks are developed take them from us by offering higher salaries than we can afford to pay.

Many of you have difficulty in finding salesmen to properly represent you and your wares on the road. Retailers have the same difficulty in securing model clerks to properly represent them and talk their wares behind the counter. We all know how much more readily we buy of the man who understands and knows how to talk his wares. Every salesman who knows and understands your wares is in a way your salesman, and you reap the benefit of his sales.

#### The Advertising Spirit.

This is the era of advertising. Retailers too are catching the spirit of the times and many more would advertise than do if they knew better how. Our trade press has done much to stir up and encourage this spirit. A few manufacturers have helped along the movement by preparing advertisements and furnishing cuts of their specialties. Furnish small cuts of your wares for use in newspaper advertising. Short descriptions and small cuts of your wares we need and ask for. Remember that the retailer as an advertiser is in swaddling clothes.

How can he unassisted produce ads. of your goods that are attractive and bring results? I have seen criticism of the same ad. of a retailer standing for months without change. But I assure you that it is easier for the proverbial camel to go through the eye of a needle than for many of us to get up unassisted a new ad. for our daily and weekly papers.

Nor do I come to you with these suggestions as a suppliant for help to the poor retailer. No one knows better than you that our success is yours, and whatever increases our sales widens your market. Here indeed lies our community of interest.

#### Parcels Post Legislation.

A good part of the work of our National Association has been directed with your own against parcels post legislation, and very effectively, too. We were the first business organization to raise a cry against this iniquitous measure. The first appearance before your two organizations of representatives of the National Retail Association was in 1903, when Mr. Bogardus, then our president, addressed you upon the subject. It is with satisfac-

tion we note the growth of opposition to this measure outside our triple organization.

The frequent letters in *The Iron Age* from its Washington correspondent have been very valuable to retailers, keeping them informed of the movements of these parcels post advocates, and with the aid rendered in other ways by the rest of the trade press have had a tremendous influence in awakening widespread opposition to this measure.

#### Attitude of the Daily Press.

I have been amazed at what has seemed to me to be almost criminal shortsightedness, when some of our daily papers appear as advocates of this measure—surely with no consideration of the interests of proprietors and stockholders by their editorial writers—since they advocate a plan which, a veritable boomerang, would sweep away pages of well paying advertisements. Mail order business, which alone is interested in parcels post, once the measure is secured will quickly abandon the daily papers for those magazines whose widespread circulation makes them a better advertising medium.

Let me urge that such united action be taken by your two organizations before adjournment of this convention as shall bring the dire evils of a parcels post, as this business organization sees them, to the attention, the thoughtful consideration and the better understanding of the proprietors and editors of the daily papers of this country. Retailers regard it of paramount importance that this matter be brought by you to the attention of the publishers of those daily papers which will in the next few months mold public opinion for or against this feature.

#### Catalogue House Goods.

To learn how we have succeeded with the aid and leadership of the Joint Committee—against standard goods being sold by the catalogue houses—it is only necessary to compare the latest catalogues with former ones. And, for the organization which I represent, I desire to express to both manufacturer and jobber our appreciation and gratitude for aid and assistance rendered, and the compliance of so many of you with our desires and requests in this matter.

A few manufacturers have expressed their purpose to continue their business relations with these mail order houses, and in some instances, judging from the prices at which their goods are sold, do not care to protect the retailer's interests even to the extent of regulating the prices at which their goods are catalogued. We, however, continue to hope they will yet view this matter from our point.

#### We Plead for that United and Enthusiastic Action

in this matter which shall foster and further develop our present system of merchandising—manufacturer to jobber, jobber to retailer, retailer to consumer; rather than the demoralizing methods of mail order houses, which with cut prices, gift giving schemes, widespread money borrowing system, that cannot but work disaster upon present day business methods, seek for their own aggrandizement, usurpation of manufacturer, elimination of jobber and distrust of local merchant. We surely have the brains and courage, when awake to the situation, to stem this tide of business demoralization.

#### Rural Delivery, Trolley Lines and Telephone

are making country and village life more attractive, more desirable every day—a condition most happy for the welfare and prosperity of our beloved country. Will this condition be furthered by any system of business which does away with the retailers of village and town, and puts in their places mail order houses hundreds of miles away?

A mail order house that controls forty million dollars capital will certainly increase the number of its factories as rapidly as the quantity of goods it can market will justify. Some of them are also doing so large a borrowing or banking business with their distant patrons that bankers are becoming alarmed at the flow of money away from the towns and smaller cities into the hands of these firms. Such vast amounts of money must be invested, and does it not seem that a syndicate of mail order houses located in the principal business centers is much nearer realization to-day than when your attention was called to its possibility on a former occasion?

Several mail order houses of no small magnitude have failed in the last year, and we believe with the improved methods of the retailers in conducting business, with the prevention of the parcels post legislation, the aid we render one other, the present business method of manufacturer to jobber, jobber to retailer, retailer to consumer, will continue to prevail.

#### Retailers Would Welcome Heartily

large representations of manufacturers and jobbers at their State and national meetings. Such affiliation could

result only in good, for by addresses and discussion, the exchange of ideas and opinions, the friendly relations now existing would be the more closely cemented, enabling us to work more in unison, more in defense of our mutual interest and good, as illustrated by what has been accomplished in the prevention of parcels post legislation. That what has been accomplished has been of benefit to the individual members of our several organizations no one can deny. Many other questions will doubtless arise in our kaleidoscopic times that may demand quick, united action. The three branches of the Hardware and Iron trade represented here to-day, manufacturer, jobber, retailer, representing also the greatest volume of business in any single line of trade in the world, were first to be brought together for consideration and discussion of subjects of mutual interests.

Let us prove to other lines of business by our harmonious action and the good results obtained thereby, that they also will be benefited by following the path where we have blazed the way.

#### CONVENTION NOTES.

Just as President Wright of the jobbers' association was about to begin his annual address he was interrupted by ex-President Supplee, who presented him with a handsome ivory headed gavel on behalf of Mr. Wright's many friends in the association. In expressing his thanks for the gift Mr. Wright said he hoped it would always be used to the credit of the owner and to the advantage of the givers.

An entertaining feature not down upon the programme was an impromptu chair ride on the board walk tendered the jobbers by the manufacturers at the close of the Friday afternoon sessions. A large number of rolling chairs were engaged and in spite of the somewhat inclement weather the airing was much enjoyed by the many who participated, especially those who were fortunate enough to secure partners from among the ladies.

On the last day of the convention W. H. Bennett, Chicago, was presented with a handsome set of silver knives, forks, table spoons and teaspoons from the passengers on the "Hardware Special" as a token of their appreciation for his attention to their comfort during the trip Eastward.

The thanks of all attendants at the convention were due to F. B. Platt, who occupied the laborious post of railroad secretary, and to E. S. Jackson, having in charge the issuing of the banquet tickets and the seating of the guests. The jobbers were also much indebted to J. H. Van Newkirk who ably filled his wonted position as journal secretary. Thanks were formally voted to all these gentlemen and to Rev. John R. Davis, Philadelphia, who offered prayer at the opening session.

#### MANUFACTURERS IN ATTENDANCE.

AMERICAN SCREW COMPANY, Providence, R. I.: William G. Smythe, H. A. Taylor, Frank Horr.  
AMERICAN STEEL & WIRE COMPANY, Chicago: W. P. Bissell, D. A. Merriman, T. B. Coles.  
AMERICAN SHEET & TIN PLATE COMPANY, New York: Howard M. Davis, Thomas W. Simpkins, T. I. Andrews, Thos. A. Gessler, W. H. Eaton, W. J. Wetstein, F. Vaughan Stapler.  
AMERICAN AXE & TOOL COMPANY, Glassport, Pa.: Chas. H. Wier, W. T. Johnson.  
AMERICAN FORK & HOE COMPANY, Cleveland, Ohio: F. S. Kretzinger.  
AMERICAN WRINGER COMPANY, New York: G. H. Jantz.  
AMES SHOVEL & TOOL COMPANY, Boston, Mass.: Hobart Ames, S. S. Early, C. S. Hubbard, Lynford Rowland, Jr., C. F. Reichner, J. P. Tabb, Benj. M. Wilson, H. M. Myer.  
ARNOLD SAFETY RAZOR COMPANY, Reading, Pa.: J. G. Hansen.  
ATKINS, E. C., & Co., Indianapolis, Ind.: W. L. Sandford, J. F. Carey, N. A. Gladding.  
ATHA TOOL COMPANY, Newark, N. J.: Henry G. Atha, Edward Ingalls.  
ATLANTIC SCREW WORKS, Hartford, Conn.: A. W. Bowman.  
AUTOMATIC SASH HOLDER COMPANY, 277 Broadway, New York: C. W. Walters.  
AVERY STAMPING COMPANY, Cleveland, Ohio: Henry W. Avery.  
BARNETT, G. & H., COMPANY, Philadelphia: Alfred W. Barnett.  
BEMIS & CALL HARDWARE & TOOL COMPANY, Springfield, Mass.: Howard R. Bemis, John C. Beggs, Edwin L. Bemis, A. C. Cordner.  
BOMMER BROTHERS, Brooklyn, N. Y.: Gustav Bommer.  
BOSTWICK STEEL LATH COMPANY, Niles, Ohio: Wm. G. Hurlbert.  
BOSS WASHING MACHINE COMPANY, Cincinnati: Louis E. Dietz, Wm. Dietz.  
BRONSON-WALTON COMPANY, Cleveland, Ohio: W. H. Brooke, A. E. Bronson.  
BARNETT, OSCAR, FOUNDRY COMPANY, Newark, N. J.: Gerald Hannah, Thomas J. Hannah.

BRYDEN HORSESHOE COMPANY, Catasauqua, Pa.: Geo. E. Holten.  
CARNEGIE STEEL COMPANY, Pittsburgh, Pa.: W. G. Clyde, S. A. Benner, J. W. Brainard, F. H. Somers, I. W. Jenks.  
CHALLENGE CUTLERY CORPORATION, New York: W. M. Taussig, E. T. Smythe, Felix B. Lippman, Chas. F. Wiebusch.  
CHATILLON, JOHN, & SONS, New York: Louis A. Tranberg, Dan. A. Schnebel.  
CLYDE CUTLERY COMPANY, Clyde, Ohio: R. B. Jones.  
COLUMBIAN HARDWARE COMPANY, Cleveland, Ohio: C. T. Stork, Ludlow S. Sherwood.  
CORBIN, P. & F., New Britain, Conn.: Charles H. Parsons, W. E. Bartholomew, J. D. Brainerd, D. Crawford, Jr., Wm. Bishop, W. C. Schiphens.  
CORBIN CABINET LOCK COMPANY, New Britain, Conn.: C. H. Baldwin, Geo. F. Taylor, George L. Corbin, A. L. Mackay, D. O. McQuarrie.  
CORBIN SCREW CORPORATION, New Britain, Conn.: Charles Glover, Fred. W. Fee, G. P. Fitch, C. A. Earl.  
CRONK & CARRIER MFG. COMPANY, Elmira, N. Y.: C. F. Carrier.  
CAMBRIA STEEL COMPANY, Johnstown, Pa.: J. G. Rittenhouse, Jr.  
CARVER FILE COMPANY, Philadelphia: David Halsted.  
CLEVELAND STAMPING & TOOL COMPANY, Cleveland: Hopkin Williams.  
COLDWELL LAWN MOWER COMPANY, Newburgh, N. Y.: H. W. Mapes, E. B. Sweichert.  
COLT'S PATENT FIRE ARMS MFG. COMPANY, Hartford, Conn.: F. C. Nichols.  
HENRY DISTON & SONS, Philadelphia: Samuel Diston.  
DANA MFG. COMPANY, Cincinnati, Ohio: Frank M. Snook, L. W. Stewart.  
DOVER MFG. COMPANY, Canal Dover, Ohio: R. F. Lund, O. A. Keyser.  
DAISY MFG. COMPANY, Plymouth, Mich.: E. C. Hough, A. W. Chaffee.  
EAGLE LOCK COMPANY, New York: H. B. Plumb, G. W. Carter, F. D. Ford, C. W. Plumb.  
ENTERPRISE MFG. COMPANY, Philadelphia: Chas. W. Asbury.  
EXCELSIOR STEEL FURNACE COMPANY, Chicago: A. W. Glessner.  
EMPIRE KNIFE COMPANY, Winsted, Conn.: Chas. L. Alford.  
FERROSTEEL COMPANY, Cleveland: A. E. Menke.  
GARLAND NUT & RIVET COMPANY, Pittsburgh, Pa.: Robert Garland.  
GRIFFIN MFG. COMPANY, Erie, Pa.: W. A. Crawford.  
GOODSELL COMPANY, Antrim, N. H.: D. H. Goodell, R. C. Goodell, A. W. Bond.  
GOODSELL-PRATT COMPANY, Greenfield, Mass.: Wm. M. Pratt.  
GRAHAM NUT COMPANY, Pittsburgh, Pa.: Chas. J. Graham.  
GRAFTON STONE COMPANY, Grafton, Ohio: F. S. Willis.  
GRAHAM-PHILLIPS HORSESHOE & IRON COMPANY, Cincinnati: Frank C. Graham.  
HAMILTON RIFLE COMPANY, Plymouth, Mich.: W. B. Penfield.  
HOPKINS & ALLEN ARMS COMPANY, Norwich, Conn.: Edward E. Perry.  
HUSSEY-BINNS SHOVEL COMPANY, Pittsburgh, Pa.: R. H. Binns, Geo. W. Willson.  
HARRINGTON & RICHARDSON ARMS COMPANY, Worcester, Mass.: Wm. Carver, Geo. F. Brooks.  
HERO FRUIT JAR COMPANY, Philadelphia: A. P. Pinney.  
HELLER BROS. COMPANY, Newark, N. J.: Elias G. Heller, Paul E. Heller, W. W. Lyons.  
W. A. IVES MFG. COMPANY, Hamden, Conn.: C. A. Benham.  
IVER JOHNSON'S ARMS & CYCLE WORKS, Fitchburg, Mass.: F. I. Johnson, G. F. Saulsbury, W. A. Shepard, F. I. Clark.  
IRON CITY TOOL WORKS, Pittsburgh: Wm. H. Hays.  
KELLY AXE MFG. COMPANY, Charleston, W. Va.: James P. Kelly, George T. Price, W. B. Lockitt.  
KUEFFEL & ESSER COMPANY, New York: L. Schermerhorn.  
KLAUER MFG. COMPANY, Dubuque, Iowa: W. H. Klauer.  
KORN, GEORGE W., RAZOR MFG. COMPANY, Little Valley, N. Y.: George W. Korn.  
LAMSON & SESSIONS COMPANY, Cleveland, Ohio: George M. North, H. C. Holt, F. C. Case.  
LANDERS, FRARY & CLARK, New Britain, Conn.: F. A. Searle.  
LAWSON MFG. COMPANY, Chicago, Ill.: W. H. Bennett.  
LAKE ERIE IRON COMPANY, Cleveland, Ohio: F. W. Davis.  
LOCKWOOD MFG. COMPANY, South Norwalk, Conn.: George E. Eddy, A. T. Wright.  
LOVELL MFG. COMPANY, Erie, Pa.: A. W. Walker, Chas. S. Meacham, E. L. D. Hester.  
LUFKIN RULE COMPANY, Saginaw, Mich.: Theodore Huss, H. G. Hollis, S. B. McGee, F. J. Sharp, Fred. Buck.  
LIVERIGHT BROS., Philadelphia: Arthur Liveright.  
LALANCE & GROSJEAN MFG. COMPANY, New York: Palmer M. Holmes.  
MANNING-BOWMAN COMPANY, Meriden, Conn.: H. S. Merriplees.  
MCCAFFREY FILE COMPANY, Philadelphia, Pa.: Hugh McCaffrey, Edward V. McCaffrey, J. J. McCaffrey.  
MCKINNEY MFG. COMPANY, Allegheny, Pa.: J. P. McKinney, C. M. King, Frank B. Smith.  
MILLER BROS. CUTLERY COMPANY, Meriden, Conn.: Geo. F. Rockwell.  
MILLER LOCK COMPANY, Philadelphia, Pa.: Edward S. Jackson, Walter Jackson, I. T. Roder.  
NATIONAL ENAMELING & STAMPING COMPANY, Baltimore, Md.: W. H. Matthai, Geo. H. Harper.  
NIAGARA MACHINE & TOOL COMPANY, Buffalo, N. Y.: Wm. F. Schweigert, Geo. A. Lantz.  
NICHOLSON FILE COMPANY, Providence, R. I.: Wallace L. Pond, F. Herbert Smith.  
NORTH BROS. MFG. COMPANY, Philadelphia, Pa.: A. C. Albrecht, James Kinsman, D. McMillan.



NORWALK LOCK COMPANY, South Norwalk, Conn.: M. R. McCausland, Geo. R. Barnum.  
 NEVERSLIP MFG. COMPANY, New Brunswick, N. J.: W. J. McCurdy.  
 NATIONAL CUTLERY COMPANY, Detroit, Mich.: E. H. Sutton, Chas. H. Myns.  
 NATIONAL SUPPLY COMPANY, Baltimore, Md.: Chas. R. Wilcox.  
 OHIO TOOL COMPANY, Columbus, Ohio: Wm. E. Jones, Wm. G. Miller.  
 OLIVER IRON & STEEL COMPANY, Pittsburgh, Pa.: Henry B. Lupton, George T. Bailey, W. P. Smith.  
 ONEIDA COMMUNITY, Kenwood, N. Y.: S. R. Leonard, W. T. Earl, Alfred Clark.  
 PARKER, CHARLES, COMPANY, Meriden, Conn.: Frederick Pease.  
 PETERS CARTRIDGE COMPANY, Cincinnati, Ohio: Geo. R. Benjamin, T. H. Keller.  
 PHILADELPHIA LAWN MOWER COMPANY, Philadelphia: Walter E. Graham, W. K. Hawks.  
 PIKE MFG. COMPANY, Pike, N. H.: E. B. Pike, J. A. Winters, E. Bertram Pike, E. Warren Smith, H. E. Smith.  
 PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.: F. H. Forman, William Taylor, W. C. Reitz, J. H. Roberts, Chas. M. Porcher, O. S. Decker.  
 PLUMB, FAYETTE R., INCORPORATED, Philadelphia, Pa.: Fayette R. Plumb.  
 PRITCHARD-STRONG COMPANY, Rochester, N. Y.: R. B. Alford, Henry G. Strong, J. H. Cumming.  
 REYNOLDS WIRE COMPANY, Dixon, Ill.: H. G. Reynolds, Walter B. Merriman.  
 RICHMOND CEDAR WORKS, Richmond, Va.: J. Scott Parrish.  
 RUSSELL & ERWIN MFG. COMPANY, New York: H. S. Hart, B. A. Hawley, T. J. Usher, W. P. Hudson, J. L. Clayton, J. H. Van Newkirk.  
 READING HARDWARE COMPANY, Reading, Pa.: John E. Harbater, Geo. E. Tyson, C. S. Packard, Oswald M. Mulligan, S. Y. Reigner, W. R. Johnson.  
 REEVES MFG. COMPANY, Canal Dover, Ohio: A. J. Krantz, W. C. Caldo.  
 JNO. A. ROEBLING'S SONS COMPANY, Trenton, N. J.: H. L. Shippy.  
 ROME MFG. COMPANY, Rome, N. Y.: W. B. Johnson.  
 SARGENT & CO., New York: Geo. H. Sargent, Geo. F. Wlepert.  
 SAVAGE ARMS COMPANY, Utica, N. Y.: F. P. Kelley, C. L. Wood, A. W. Connor.  
 SENECA CHAIN COMPANY, Kent, Ohio: C. W. Power.  
 SIMONDS MFG. COMPANY, Fitchburg, Mass.: John E. Kelly, G. K. Simonds, A. T. Simonds, G. T. Curtis.  
 STANDARD CHAIN COMPANY, Pittsburgh, Pa.: J. E. Pumphrey, A. B. Crockett.  
 STANDARD HORSE NAIL COMPANY, New Brighton, Pa.: Fred. S. Merrick.  
 STANDARD HORSE SHOE COMPANY, Boston, Mass.: George S. Boutwell.  
 STANLEY WORKS, New Britain, Conn.: George P. Hart, L. H. Pease.  
 O. P. SCHRIVER & CO., Cincinnati: O. P. Schriver.  
 STEVENS, J., ARMS & TOOL COMPANY, Chicopee Falls, Mass.: F. E. Muzzy, I. H. Page.  
 ST. LOUIS SHOVEL COMPANY, St. Louis, Mo.: Walter W. Birge, Julius C. Birge.  
 STANLEY RULE & LEVEL COMPANY, New Britain, Conn.: R. M. Parsons, A. W. Stanley, R. N. Peck, E. A. Cherry, Benj. Wheeler.  
 STANDARD STAMPING COMPANY, Marysville, Ohio: L. T. Blue.  
 STANDARD TOOL COMPANY, Cleveland: R. T. Lane.  
 H. C. TACK COMPANY, Cleveland, Ohio: W. L. Hughson, C. C. Paine.  
 N. & G. TAYLOR COMPANY, Philadelphia: Owen J. Geraghty, H. W. Taylor.  
 C. C. & E. P. TOWNSEND COMPANY, New Brighton, Pa.: Jno. M. Townsend.  
 TUBULAR RIVET & STUD COMPANY, Boston: A. C. Bray.  
 U. S. STAMPING COMPANY, Moundsville, W. Va.: J. M. Sanders.  
 UNION METALLIC CARTRIDGE COMPANY, New York: A. H. Meyerhoff, Jonathan E. Avery, J. W. Wall.  
 UNION MFG. COMPANY, New Britain, Conn.: M. L. Bailey.  
 U. S. CARTRIDGE COMPANY, Lowell, Mass.: A. W. Child.  
 U. S. GRAPHITE COMPANY, Saginaw, Mich.: H. C. Woodruff, Eugene Franklin.  
 WM. VOGEL & BROS., Brooklyn, N. Y.: H. M. Edwards, W. I. Sherwood.  
 WARASH SCREEN DOOR COMPANY, Chicago, Ill.: E. M. Kemp.  
 WALLINGFORD MFG. COMPANY, Wallingford, Vt.: Wm. A. Graham.  
 WARREN, J. D., MFG. COMPANY, Chicago, Ill.: J. D. Warren.  
 WHITE MOUNTAIN FREEZER COMPANY, Nashua, N. H.: Lester F. Thurber.  
 WHITE, L. & I. J., COMPANY, Buffalo, N. Y.: John G. H. Marvin, J. H. Dillon.  
 WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.: Frank G. Drew, Irby Bennett.  
 WINSLOW, SAMUEL, SKATE MFG. COMPANY, Worcester, Mass.: S. E. Winslow.  
 WOOD SHOVEL & TOOL COMPANY, Piqua, Ohio: Wm. W. Wood, 3d, S. S. Gould.  
 WRIGHT WIRE COMPANY, Worcester, Mass.: George M. Wright, J. F. Searle, J. J. Collins, Lathrop Jackson.  
 WYOMING SHOVEL WORKS, Wyoming, Pa.: Nath. G. Robertson.  
 WHEELING CORRUGATING COMPANY, Wheeling, W. Va.: A. T. Moffatt, W. H. Abbott.  
 WINSTED MFG. COMPANY, Winsted, Conn.: A. L. Clark.

WOODHOUSE CHAIN WORKS, Trenton, N. J.: J. H. Woodhouse.  
 GEO. WOSTENHOLM & SONS, Sheffield, England: W. P. Field.  
 YALE & TOWNE MFG. COMPANY, New York: Kirk Brown, E. C. Waldvogel, W. C. Bigelow.

#### OTHER VISITORS.

CHAS. H. WIER, Wier & Wilson, Baltimore, Md.  
 FRANK J. OLIVER, Oliver Bros. Purchasing Company, New York.  
 THOMAS E. OLIVER, Oliver Bros. Purchasing Company, New York.  
 ALFRED C. GREENING, R. K. Carter Company, New York.  
 WM. B. PAULSCRAFT, R. K. Carter Company, New York.  
 FRANK R. BLAUVELT, R. K. Carter Company, New York.  
 WM. B. FOX, JR., W. B. Fox & Bro., New York.  
 CLEMENT M. BIDDLE, Biddle Purchasing Company, New York.  
 DUDLEY ONDERDONK, Biddle Purchasing Company, New York.  
 T. H. NEWMAN, Montreal, Canada.  
 JAMES HARDY, Toronto, Canada.  
 R. STARKE, Starke Hardware Company, Montreal, Canada.  
 E. M. BUSH, Evansville, Ind.  
 M. L. COREY, Argos, Ind.  
 W. P. BOGARDUS, Mt. Vernon, Ohio.  
 S. R. MILES, Mason City, Iowa.  
 A. H. ABBE, New Britain, Conn.  
 HORACE T. HUNTER, *Hardware and Metal*, Montreal, Canada.  
 A. P. MITCHELL *Hardware*, New York.  
 J. W. PENTE, *Hardware*, New York.  
 HARRY WISE, *The Tradesman*, Chattanooga, Tenn.  
 DANIEL STERN, *The American Artisan*, Chicago.  
 DANIEL T. MALLETT, *Hardware Dealers' Magazine*, New York.  
 JAMES H. KENNEDY, *Hardware Dealers' Magazine*, New York.  
 R. R. WILLIAMS, *The Iron Age*, New York.  
 A. H. CHAMBERLAIN, *The Iron Age*, New York.  
 WALTER C. ENGLISH, *The Iron Age*, Boston.  
 S. S. RECKEFUS, *The Iron Age*, Philadelphia.  
 A. A. MILLER, *The Iron Age*, Philadelphia.

#### JOBBERS IN ATTENDANCE.

An imposing representation of the Hardware jobbing interests of all sections of the country, North, South, East and West, even to the Pacific Coast, was in attendance at the convention, probably larger than at any former gathering. Owing to pressure on our space we defer the publication of the list until our next issue.

At the recent annual meeting of the National Association of Agricultural Implement and Vehicle Manufacturers in Chicago the following officers were chosen for the ensuing year: President, H. E. Miles, Racine-Sattley Company, Racine, Wis.; treasurer, J. B. Bartholomew, Avery Mfg. Company, Peoria, Ill.; vice-presidents, W. N. Rumely, M. Rumely Company, La Porte, Ind.; H. M. Wallis, J. I. Case Plow Company, Racine, Wis.; C. G. Rowley, Aspinwall Mfg. Company, Jackson, Mich.; D. W. Spencer, Johnson Harvester Company, Batavia, N. Y.; R. S. Buch, A. Buch's Sons Company, Elizabethtown, Pa.; A. E. Mayer, International Harvester Company, Chicago, Ill.; W. R. Harrison, W. R. Harrison Mfg. Company, Massillon, Ohio; S. D. Porter, Acme Harvesting Machine Company, Peoria, Ill.; T. B. Carson, Bettendorf Metal Wheel Company, Davenport, Iowa; A. H. Patch, Clarksville, Tenn.; E. P. Curtis, Richardson Mfg. Company, Worcester, Mass.; Jos. W. Moon, Jos. W. Moon Buggy Company, St. Louis, Mo.; H. M. Wade, U. S. Wind Engine & Pump Company, Batavia, Ill.; Executive Committee: Newell Sanders, Newell Sanders Plow Company, Chattanooga, Tenn., chairman; S. E. Swayne, Robinson & Co., Richmond, Ill.; H. M. Kinney, Winona Wagon Company, Winona, Minn.; F. C. Johnson, American Seeding Machine Company, Springfield, Ohio; A. J. Brosseau, Gale Mfg. Company, Albion, Mich. Norfolk, Va., was chosen as the scene of next year's convention.

THE AMERICAN ICE SHOE COMPANY, 26 East Twenty-first street, New York, has been incorporated under the laws of New Jersey to manufacture attachments for Horseshoes. The officers of the company are: W. M. Davis, president; J. W. Buck, vice-president and general manager, and F. W. Greene, secretary and treasurer, all of New York City.

IVY L. PHILLIPS, manager of the Phillips Hardware Company, Cambridge, Md., is just recovering from an operation for appendicitis. He has been ill for over two months, but is now able to go to his office.

## System for the Retailer.

Second Article.

## FREIGHT AND CARTAGE CHARGES.

BY JOHN A. MANSON, BURLINGTON, VT.

A DEFINITE record for convenient reference should be kept of all goods received. Many of the goods are bought delivered and freight charged back to concerns from whom purchased, some are bought with partial freight allowance and some come freight prepaid, while on the other hand some important lines on which freight is about 10 per cent. of cost are bought f.o.b. factory. Consequently freight on goods is not expense, but additional cost; likewise is cartage, and cost of goods is certainly what the cost is laid down in place of business. Most merchants find it more economical to have their freight drawn by cartage concerns rather than to draw it themselves. In many places such cartage concerns pay the freight bills and draw odd lots of goods for about 50 cents a ton and car lots for 40 cents a ton. It is a convenience to have some such arrangement and settlements made monthly and payments occasionally made on account if freight is coming in rapidly.

Fig. 1 illustrates a page from the freight and cartage record, showing how freight received is recorded. The goods, together with freight bill, are brought to place of business, and the person who receives the freight checks the number of pieces with the freight bill and signs it, after noting in freight and cartage record the date received, the number of pieces, the route, the concern from whom shipped, the weight of the goods and the amount of freight charges. The bill later comes back from the cartage concern's office. The person who checks invoices notes in freight and cartage record his name, and on each invoice records the date goods were received, the weight of shipment, amount of freight charges, or if freight was prepaid. At the end of the month the freight bills are all checked up with the freight and cartage record, and account then figured and settled accordingly. As weights of shipments and freight charges have been noted on invoices it is the work of person who makes final verifications of such invoices to see that all freight charges are correct. Fig. 2 illustrates the page in freight and cartage record when final entries and settlement with the concern which did the carting and paid the freight have been made.

(To be continued.)

THE BENEDICT MFG. COMPANY, East Syracuse, N. Y., has purchased the Onondaga Metal Shops, Syracuse,

and has moved the business to East Syracuse, where the company has built a special factory, which will be known as the Benedict Art Studio. The line will consist of hand wrought copper, brass and iron, made in pieces widely different in size and use, such as Lamps, Lanterns, Chandeliers, Electrolers, Candlesticks, Umbrella Stands, Jardiniers, Cigar Boxes, Smoking Sets, Ash Trays, Ash and Match Holders, Serving Trays, Chafing Dishes, Wine Coolers, Wall Placques and Andirons. The company will also produce all kinds of

Date	What	Route	From Whom	Weight	Cartage Freight	Checked
Mar 3	8 Cases Hardware	C.V.R.R.	P. F. Corbin	800	52 40	
5	4 Cases Files	R.R.R.	G. H. Barnwell Co	540	1 80	
5	10 Bales Cotton Waste	C.V.R.R.	Bristol Mfg Co	1700	Prepaid	
6	75 Rolls Edg. Felt	R.R.R.	H. C. F. Co.	1300	3 40	
6	50 Rolls Wire Netting	C.V.R.R.	Wright Wire Co	1800	3 96	
7	30 Bales Shovels	C.V.R.R.	King Shovel Co	1400	3 75	
7	6 Boxes Ball-Bitt	C.V.R.R.	Hoyle Metal Co.	300	90	
10	4 Bales Belting	C.V.R.R.	Jewell Belting Co.	480	1 60	
10	300 Kegs Rails (Car)	R.R.R.	Pittsburgh Steel Co	30000	54 00	
13	20 Bales Corn Meal	C.V.R.R.	Union Metal Corn Co	280	87	
15	40 Cases Paint	R.R.R.	Patterson Paint Co	3600	11 20	
17	2 Cases Cars	C.V.R.R.	N. Y. B. O. Co	440	2 10	
20	200 Rolls Finishing Car	R.R.R.	Pittsburgh Steel Co	30000	76 80	
20	2 Boxes Tools	C.V.R.R.	S. R. & L. Co	200	68	
24	6 Cases Butte	C.V.R.R.	Stanley Works	580	1 72	
24	3 Bales Turners	C.V.R.R.	Francis Bros	240	68	
27	4 Cases Screws	C.V.R.R.	Columbus Corp	400	1 10	
30	2 Bales Glue	R.R.R.	R. J. Waddell & Co	360	88	

Fig. 1.—Page from Freight and Cartage Record, Showing How Freight Received Is Recorded.

Date	What	Route	From Whom	Weight	Cartage Freight	Checked
March 3	8 Cases Hardware	C.V.R.R.	P. F. Corbin	800	52 40	King
5	4 Cases Files	R.R.R.	G. H. Barnwell Co	540	14 1 80	King
5	10 Bales Cotton Waste	C.V.R.R.	Bristol Mfg Co	1200	30	Prepaid King
6	75 Rolls Edg. Felt	R.R.R.	H. C. F. Co.	1300	33 3 40	King
6	50 Rolls Wire Netting	C.V.R.R.	Wright Wire Co	1800	45 3 96	King
7	30 Bales Shovels	C.V.R.R.	King Shovel Co	1400	35 3 75	King
7	6 Boxes Ball-Bitt	C.V.R.R.	Hoyle Metal Co.	300	08 90	King
10	4 Bales Belting	C.V.R.R.	Jewell Belting Co.	480	12 1 60	King
10	300 Kegs Rails (Car)	R.R.R.	Pittsburgh Steel Co	30000	600 54 00	King
13	20 Bales Corn Meal	C.V.R.R.	Union Metal Corn Co	280	07 87	King
15	40 Cases Paint	R.R.R.	Patterson Paint Co	3600	90 11 20	King
17	2 Cases Cars	C.V.R.R.	N. Y. B. O. Co	440	11 2 10	King
20	200 Rolls Finishing Car	R.R.R.	Pittsburgh Steel Co	30000	640 76 80	King
20	2 Boxes Tools	C.V.R.R.	S. R. & L. Co	200	05 68	King
24	6 Cases Butte	C.V.R.R.	Stanley Works	580	14 1 72	King
24	3 Bales Turners	C.V.R.R.	Francis Bros	240	06 68	King
27	4 Cases Screws	C.V.R.R.	Columbus Corp	400	10 1 10	King
30	2 Bales Glue	R.R.R.	R. J. Waddell & Co	360	09 88	King
				\$1587 167 84		
Jas Kelly & Co				675	15 89	
Car lots at 40¢ ton				\$183 73		
Less at 50¢ ton						
				3/0 Paid on 70 65.00		
				3/0 " " " 90.00		
				3/0 " " " 28.73		
				\$183 73		

Fig. 2.—Page from Freight and Cartage Record with Final Entries Made.

architectural and decorative iron work, such as Window Gratings, Fireplace Hoods, Gateways and Doors, Hinges, Draw Pulls, Knockers and Escutcheons, and any kind of special work that may be required.

THE SCHELL HARDWARE COMPANY, which operates stores at Somerset, Uniontown and Connellsville, Pa., has had plans prepared for the erection of a four-story brick warehouse at Connellsville, from which the other stores will be supplied.



# HARDWARE MERCHANTS' BUSINESS METHODS.

## OFFICE SYSTEM OF H. W. MILLS & CO.

**A**N efficient and clean cut system of writing up and handling orders, making bills and booking accounts is employed by H. W. Mills & Co., whose large Hardware and Mill Supply House is situated in Paterson,

eries. These sheets, like those formerly described, are not priced until after the filling of the orders, but for present convenience prices and extensions subsequently added are shown in the cut. Should any order call for goods which cannot be supplied from stock they are promptly ordered, at which time the item or items are crossed off the original sales sheet and a

### Back Order Sheet

is made out, as shown in Fig. 4, and placed in the loose leaf back order book or binder. A stamp is used on this sheet showing from whom the goods are ordered

DATE BILLED		H. W. MILLS & CO.		Salesman S		BINDER FOLD	
Customers' Order No.		Paterson, N. J., Aug 29 1906				DATE SOLD	
Sold to H. B. Brown						LEADER FOLD	
Del'd to Jinks							
Shops' Check	Quantity	Weight	Price	SALESMAN MUST NOT USE THESE COLUMNS			
✓	1	for 8" Heavy T Hinges		V			
ORIGINAL							

Fig. 1.—Sales Sheet for Writing Up Orders Delivered at the Store.

N. J. A description of some features of the system, with reproductions of the blanks employed, which have been courteously furnished by this firm, will undoubtedly prove interesting and suggestive to many of our readers.

### Orders Delivered in the Store

to the large purchaser—contractor, builder, &c.—or his representative, are first written up in duplicate without

and by what route they may be expected, and the back order book is frequently gone over to make sure that the promptest possible attention is given. If not, letters or hurry cards are written and entries are made on the sheet showing what was done and when. "P. C., Sept. 3" in the cut indicates that a postal card was sent out on that date urging the manufacturer to rush delivery. If necessary orders are cancelled and the goods are secured elsewhere. When the goods come in the back or-

DATE BILLED		H. W. MILLS & CO.		P. A. S. Tel. 65		S	
Customers' Order No.		Hardware and Mill Supplies.					
Branch Store 10 North Main St.		Paterson, N. J., Aug 29 1906					
Sold to H. B. Brown							
Del'd to Jinks							
Shops' Check	Quantity	Weight	Price	SALESMAN MUST NOT USE THESE COLUMNS			
✓	1	for 8" Heavy T Hinges		V			
DUPLICATE							

Fig. 2.—Duplicate of Sales Sheet, Affording Memorandum to Go with Goods.—Both Ends Are Torn Off Where Perforated.

entering prices, the original sheet being reproduced in Fig. 1 and the duplicate in Fig. 2. The latter is perforated as shown in the cut, so that the center may be torn out to go with the goods as a memorandum. This is especially important for the reason that invoices, as will be explained later, are not rendered for each order, but

der sheet becomes a regular order sheet and goes the usual route.

### The Day's Orders Collected.

After orders have been filled the original sales sheets are collected in a binder containing all the work of the

DATE BILLED		H. W. MILLS & CO.		Salesman JY		BINDER FOLD	
SEPT 1 1906		Customers' Order No. 1236		Paterson, N. J.		5217	
Sold to Frank Smith						DATE SOLD	
Town and State Pompton N. J.						AUG 31 1906	
Ship by Exp (local)						LEADER FOLD	
						4-80	
Shops' Check	Quantity	Weight	Price	SALESMAN MUST NOT USE THESE COLUMNS			
✓	1	of 6" Cross Hinges	6.00	6.00			
	1	of 26" Stellan Hinges					

Fig. 3.—Sales Sheet Used on Orders for Outside Delivery.

complete itemized bills are sent out monthly instead of ordinary statements.

### Orders for Outside Delivery

or shipment by express or freight are written upon the blank reproduced in Fig. 3, which affords space for necessary data not required in the case of store deliv-

day and the date is stamped on each. Next morning they are gone over and priced—that is, discounts or net prices are entered, after which the figuring is done and the extensions are filled out in the bookkeeping department. The sheets are then arranged alphabetically and numbered with a machine, proceeding from the last num-

ber included in the previous day's business. They are then placed in a file or binder containing the business of the month. In posting to ledger accounts dates and charge numbers only are used, affording a means of referring back to the order sheet containing detailed entries, should a question arise regarding any particular charge.

Bills Rendered Monthly

As previously stated in this article, bills are not sent to regular customers for every order, but all deliveries

ence for use in loose leaf binders, of the size recently recommended by a committee of the Southern Hardware Jobbers' Association. The catalogue contains a numbered schedule of cases and crates used for packing the company's products, giving outside dimensions, cubic feet and approximate weights of each piece. Attached to the description or list of each item is the number of the package in which the goods are inclosed and the quantity regularly put up. The net weight of the goods plus the weight of the case gives the approximate gross shipping

DATE BILLED		H. W. MILLS & CO.		ORDER FILED	
Customer's Order No. 1236		Frank Smith		DATE BILLED	
Sold to		Frank Smith		LEADER FILED	
Town and State		Compton N.J.			
Ship by		Futler's Exp.			
Shipper's Clerk	Quantity		Weight	Price	SALESMAN MUST NOT USE THESE COLUMNS
	1	36" Stillam benches			
ORDERED					
From ABC Co.					
Route Erie					
Date AUG 31 1906					
PC - Sept 3					

Fig. 4.—Back Order Sheet.

are accompanied by a memorandum of the goods. Bills are rendered monthly in the form of complete itemized statements, an example of which is reproduced in Fig. 5. They are made in duplicate, the copy being a part of the original, partly separated by perforations and punched on the left hand side to fit the binder, in which it is retained for reference after the original is sent out. These double sheets or bills covering all active accounts are kept together, with the perforation unbroken, in an alphabet file, and entries are added daily or whenever an order goes through. A billing machine is used, and it is only necessary to insert a carbon sheet to make the duplicate

weight, and at the same time the cubic measurements may be obtained for export or marine shipments.

MANNING, BOWMAN & CO.'S CATALOGUE.

MANNING, BOWMAN & CO., Meriden, Conn., have just issued their fall catalogue, No. 40, of 183 large pages, devoted to Nickel and Silver Plated Ware, Seamless "Ivory" Enameled and Planished Copper Plated Ware, Spoons, Forks, Knives, &c. These include a large variety of new and original designs, also an assortment

BUYERS' HARDWARE		H. W. MILLS & CO.,		FOLIO	
LEATHER BELT.		MANUFACTURERS' AND MILL SUPPLIES.			
RAW HIDE LACE		BAR IRON AND STEEL.			
TWIN DRILLS,		59 WASHINGTON STREET, COR. FAIR ST.			
MACHINE SCREWS		PATERSON, N. J.		Sept. 30, 1906	
TAPS AND DIES.		SOLD TO John Jones			
SOLE AGENTS FOR		TERMS CASH.			
AMERICAN ALL					
WOODEN STEEL					
PULLEY.					
DRIVE WOOD					
BELT PULLEY.					
DATE	DESCRIPTION	AMOUNT	DAILY TOTAL	CREDIT	
Sept. 1	3 Rolls 2 Ply Tar Paper @.75	2 25			
	1 Jenk. Globe Valve 1/4"	55	2 80		
7	2 1/2 Pr. Heavy Strap Hinges 12" .45	1 13	1 13		
8	1 Roll 2 Ply Tar Paper			75	

Fig. 5.—Portion of Monthly Statement Made Out in Duplicate.

copy. Credits for goods returned are written with a red type ribbon, making a distinction which is quickly apparent in examining the month's account. Orders for each day are billed on the succeeding day, so that if a customer calls for his bill it is only necessary to add the previous day's charges, if any, before it is ready for him. Similarly the usual pressure of routine work at the end of the month is entirely avoided, since after one day's orders are entered and footing is completed the statements are ready to go out.

The new catalogue and price-list, No. 4, of Warwood Tool Company, Wheeling, W. Va., has been arranged as to size of page and marginal spacing with special refer-

of the most salable goods heretofore manufactured by the firm.

The Heyman-Well Company has succeeded the Harry Unna Company in San Francisco, Cal. The company is located at 68-86 Kansas street, and carries a line of Stoves, Hardware, Kitchen Utensils, Cooking, Heating and Lighting Devices.

Moulthrop Bros., DuBois, Pa., have taken the building adjoining their store, and will have it remodeled. The new quarters will be used as a large Stove department. The Hardware stock will also be augmented.



### J. A. HENCKELS.

**G**EH. KOMMERZIENRAT BECKMANN of the firm of and in charge of the great Cutlery works of J. A. Henckels, Solingen, Germany, where 2400 people are employed manufacturing all kinds of Cutlery, from Penknives to Poniards and Swords, arrived in New York October 12 on a short business visit and will return October 25 on steamer Amerika. This is his third visit to the United States, the first having been in connection with the Chicago World's Exposition, where the house took a grand prize. Mr. Beckmann at that time also was Imperial Commissioner representing Germany. On June 13 last the house of Henckels celebrated the one hundred and seventy-fifth anniversary of the establishment of the business, which was originally started by I. P. Henckels in 1731, when the Twins brand trademark was granted. On this occasion the German Emperor, as King of Prussia, conferred on Mr. Beckmann the title of geheimrath, which is equivalent to that of privy counselor. At the same time some of the more prominent employees were similarly honored, Robert Grah, a confidential man in the office, receiving the Order of the Crown, while two of the foremen were the recipients of honorable decorations. As an expression of the appreciation of the city and what the house has done in its interest the Chamber of Commerce of Solingen presented a diploma to the house of J. A. Henckels, signed by the leading manufacturers and merchants of Solingen. The works has its own branch houses in Berlin, Hamburg, Copenhagen, Vienna, Dresden, Frankfurt-on-the-Main, Cologne and Paris, some of which are both wholesale and retail and others retail only. In the United States and Canada the business is handled by Graef & Schmidt, 107 Chambers street, New York, who are sole selling agents.

### McKINNEY MFG. COMPANY'S CATALOGUE.

**M**'KINNEY MFG. COMPANY, Pittsburgh, Pa., has just issued catalogue No. 24, devoted to Polished Steel Butts, Strap and T-Hinges, Felloe Plates, Door Hangers, Track, Wrought Iron Goods, &c. Especial attention is called to the company's new system of class numbers, by means of which the number applied to each line in bright steel is also used as the base for numbers of the same line in other finishes. This has compelled the renumbering of a few of the lines, but wherever a change has been made the old number has not been given to any other line, so that if in an order an old number appears until there is familiarity with the new numbers no confusion or error will occur. Thirteen pages are devoted to code words for the different class numbers to facilitate telegraphic correspondence, and for additional convenience code words are also given throughout the book at the head of columns giving the list prices.

### FERNALD MFG. COMPANY.

**F**ERNALD MFG. COMPANY, North East, Pa., is now located in its new plant, completed within the present year, which is devoted exclusively to the manufacture of Quick Shifters and Anti-Rattlers for wagon shafts. The main building is 40 x 120 ft., two stories, steel covered. On the first floor are located the shop, shipping room and general offices. The second floor is used for storage purposes. There is also a brick boiler room and enameling room, 30 x 40 ft. Other buildings are used for storage, hose house, &c. The plant is run and heated by steam and lighted by electricity, furnished by the company's dynamo. The factory is equipped to turn out 25 gross pair of Quick Shifters per day, and the capacity is already severely taxed.

J. H. Fowler, the oldest Hardware merchant in Chester, W. Va., has leased the storeroom in the new Fischer Building, and will move his stock to the new location within the next few weeks. He will also add the sale of Agricultural and Farming Implements.

### REQUESTS FOR CATALOGUES, &c.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS** for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM GALLOP, SHERMAN & LOVELL HARDWARE COMPANY, Cortland, N. Y., which has been incorporated with a capital of \$10,500 to conduct a Hardware, Stove, Paint, Plumbing, Heating and Roofing business.

FROM HIGGINS & GILGORE, who are about to open a Hardware store at Scotio, N. Y.

FROM VOORHIES HARDWARE COMPANY, successor to Erath Hardware Company, New Iberia, La.

FROM LANE HARDWARE COMPANY, Robert Lee, Tex., which has been incorporated with a capital of \$5,000, to conduct a Shelf and Heavy Hardware, Stove, Implement and Sporting Goods business.

FROM LUNDY HARDWARE COMPANY, Rockford, Ill., which has been incorporated with a capital of \$2500 by F. A. Lundy, Agnes Callahan and E. M. St. John.

FROM CHARLES W. VAUGHN, Richmond, Va., who has moved to more commodious quarters at 2 East Broad street, and will continue the retail business in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods.

FROM F. W. HOOBLER, who has purchased the business of Henry Siebrass, Norman, Neb. The lines handled include Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods, also Buggies, which have been added to the stock.

### PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

THE MEAD DRILL MFG. COMPANY, Geneva, N. Y.: Large post card illustrating and describing Mead Grain Drills and Hubbell's Bean, Seed and Grain Separator.

THE ANSONIA NOVELTY COMPANY, Ansonia, Conn.: Catalogues relating to Alarm and Nonalarm Clocks, Scissors and Shears. In addition, the company manufactures Eight-day Clock, Water Meter and Gas Meter Movements, Counters, Registers, Steel and Aluminum Thimbles and Special Novelties.

### WHITMAN & BARNES MFG. COMPANY.

**W**HITMAN & BARNES MFG. COMPANY has removed its New York headquarters from 111 Chambers street, where it has been located for 12 years, to 59 Centre street, where the street floor has been renovated and equipped to serve the company's purpose. Ralph Templeton, as heretofore, is in charge of the Eastern territory and of the salesmen visiting the trade in the following States, viz.: New York, New Jersey, Pennsylvania, Delaware, Maryland, the two Virginias and Carolinas, Georgia, Florida, Alabama, Mississippi and Louisiana.

The Sperry Hardware Company, Sherman, N. Y., has been incorporated with a capital stock of \$10,000. The company's business will include Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting Goods, Building Material, Lumber, &c.

## MISCELLANEOUS NOTES.

### Bosley's Patent Air Stops.

The D. W. Bosley Company, Fulton and May streets, Chicago, Ill., manufacturer of weather strips, is making air stops to fit around sash cords on both sides at the top of the lower sash of windows. These are made of best quality of black felt, reinforced on the top with galvanized iron with two holes, so that the stops may be screwed on the top of the lower sash. The stops are made in three widths, to fit standard size windows. The manufacturer emphasizes the value of such a device in connection with applied weather strips.

### Galvanized Garbage Cans.

The Arrow Can Company, 35 Warren street, New York, has just brought out two garbage cans, in addition to its line of Arrow ash cans with steel rod reinforcement, illustrated in these columns earlier in the year. Features of the garbage cans are their strong, substantial character, and that they will nest inside the ash cans for shipping and storing. The Arrow Can No. 01, is a reproduction, except as to size, of the Arrow Ash Can. It is 18 in. high, 15 in. wide, has 8 vertical side rods  $\frac{1}{2}$  in. in diameter and shouldered both ends, then riveted at top into a one piece double flanged ring of heavy plate. The body is of 22 gauge and the bottom of 14 gauge after galvanizing. The bottom is one piece of metal, convex on the upper side and countersunk only  $\frac{3}{8}$  in., which serves to increase both capacity and resistance to rough usage and obviates the use of a linked hoop or band as a part of the bottom. The drop handles are of heavy malleable iron which rise to a right angle with the side of can and are held by means of 14 gauge steel clips with 4 rivets each. The cans are made of black steel plate, immersed in a bath of galvanizing metal after assembling, thus soldering the joints, and each can retains 4 lb. of the galvanizing metal. Another garbage can is the Philadelphia No. 15, which gauges No. 18 after galvanizing and is made with plain straight sides. At top and bottom a  $\frac{3}{8}$ -in. rod is rolled in for stiffening and there are no rivets in the can, except the four in each handle clip. This can has smooth edges and can be easily cleaned. The body dimensions are  $14\frac{1}{2} \times 16\frac{1}{4}$  in. in width and depth, respectively. It is made of black plate and then galvanized by immersing, taking up 3 lb. of material and the bottom seam is further soldered by hand to make it fluid tight. Both cans have removable covers which will also rest in the ash can, if necessary.

### Ladies' Suit and Skirt Hangers.

In Fig. 1 is illustrated a ladies' self-adjusting suit hanger, accommodating a jacket and skirt. It adjusts to any size band, leaving, it is explained, no mark and causing no strain upon the skirt. It is automatically ad-



Fig. 1.—Vassar Self-Adjusting Ladies' Suit Hanger.

justed by the weight of the skirt, which it is said will not drop nor get out of place, no matter how handled. The hanger allows garments to hang in their natural form, retaining pleats and folds as when worn, and the hook folds down for packing and storing. The skirt hanger, Fig. 2, is also adjusted by the weight of the

skirt to any size band, leaving no mark, neither causing strain on the skirt. It is referred to as light and strong

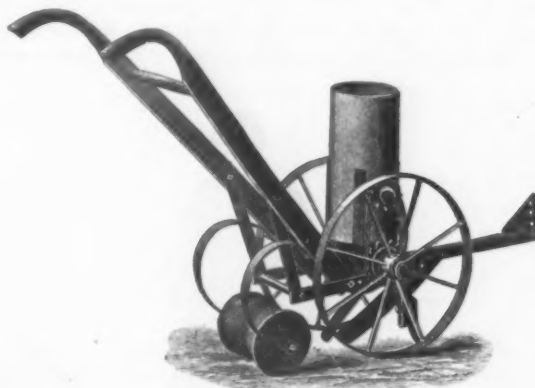


Fig. 2.—Princess Self-Adjusting Ladies' Skirt Hanger.

and as giving satisfaction. The hangers are offered by the Pittsburgh Wire Mfg. Company, 127-129 Water street, Pittsburgh, Pa.

### The Caldwell Improved Cotton Planter.

The Harriman Mfg. Company, Harriman, Tenn., is offering the Caldwell improved cotton planter here shown. The planter will drop cotton seed in hills at regular in-



The Caldwell Cotton Planter.

tervals instead of in a continuous drill. Among the mentioned advantages are the following: That the saving of seed is large and soon pays for the planter, less labor in cultivating the crop, as the plants are accurately placed and need no siding and that the amount of cotton raised per acre is increased.

### Jackson's Belt Fasteners.

Greene, Tweed & Co., 109 Duane street, New York, are marketing in the United States Jackson's new patent slotted button plate fasteners for belting, manufactured by the Jackson Belt Fastener Company, Glassop, England, as here shown. Fig. 1 shows the fastener itself,

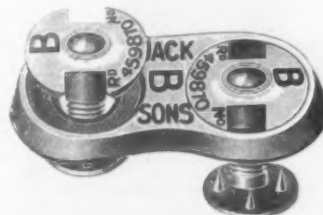


Fig. 1.—Jackson's Improved Slotted Button Plate Fastener.

Fig. 2 being a section showing grip and appearance after application to the belt. The new feature of this otherwise well established belt fastener is in the method of securing the plates without the use of square or hexagon nuts, which became objectionable in some cases on account of danger to work people. The fastener of iron as now made has the following advantage, viz.: In lieu of the button or nut having four holes for sewing up, the buttons are now made with two undercut taper slots and



a key  $5\frac{1}{4}$  in. long, with corresponding tapered ears, so that when screwing up a much firmer grip is obtained without danger of the key slipping out. The purchase is also largely increased. Further, the plates are made with recesses at the bottom to receive belt and stud, which obviates knocking on pulley, and with recess at top to receive stud head, which screws up flush and makes a

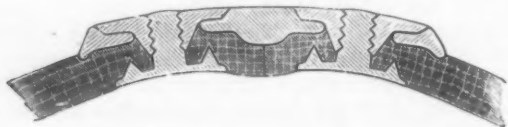


Fig. 2.—Section Showing Method of Applying.

perfect joint. The fasteners are made in 10 sizes, lettered from A to J, inclusive, the more popular sizes ending with G. The width of plates run from  $\frac{3}{4}$  in. to 25-32 in., suitable for belting from 2 in. wide to 24 in. and for from 4 to 10 ply belting.

### The Voss Automatic Washing Machine.

The Voss Bros. Mfg. Company, Davenport, Iowa, is offering a new style of washing machine as shown herewith. It has but two engaging gears, which intermesh



Fig. 1.—Voss Automatic Washing Machine.

squarely to avoid any tendency of crowding or spreading of gears. The dasher is of the large disk type, and sets automatically on the clothes, which is referred to as a



Fig. 2.—Voss Washing Machine Open.

distinct improvement in construction. A 12-in. motion of the lever produces an entire revolution of the dasher. The machine is provided with a wringer box, which, it is

pointed out, does away with wet floors, as the box is set at a proper angle to drain back into the tub. The tub is stationary, the dasher revolving. There are no springs in the mechanism, and the manufacturer calls attention to the speed and ease of operation of the machine. The company's policy in selling this machine is to make a restricted price which all dealers must uphold, which guarantees a liberal margin of profit. It is further stated that the entire line of washing machines made by the company is not handled by catalogue or mail order houses.

### Stowe's Shingling Kit.

Stowe's shingling kit, consisting of antislipping sandals, roofing saddle and shingle holder, and designed for the use of carpenters and builders, is illustrated herewith. The kit is designed to effect economy in the saving of



Fig. 1.—Antislipping Sandal.

materials for scaffolding and to eliminate danger and fear of slipping on the roof, as well as protecting the shoes and clothing from severe wear and tear. The sandal, Fig. 1, is made of leatherboard, in three sizes, large, medium and small, ranging from Nos. 5 to 12 shoes. The anchors on the bottom of the sandals are pressed



Fig. 2.—Nonslipping Shingle Holder.

from sheet steel. The nonslipping shingle holder, shown in Fig. 2, is made to hold shingles on the steepest roof, and is particularly valuable in repair work. The antislipping roofing saddle, Fig. 3, straps around the waist at the hip, affording a safe and comfortable seat while at work. Both the shingle holder and the roofing saddle are

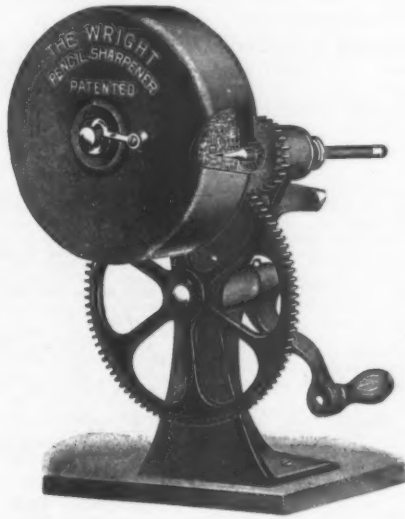


Fig. 3.—Antislipping Roofing Saddle.

made of canvas, and are provided with the antislipping anchors, such as are used on the sandals. The kit is being manufactured and marketed by the Coldwater Specialty Company, Coldwater, Mich.

## The Wright Pencil Sharpener.

The pencil sharpener shown in the accompanying illustration is referred to as economical to maintain, as there are no gears or cutters to replace. In experimenting sandpaper was found to be the best cutter and not expensive. The strip of sandpaper is clamped to the periphery of the wheel, which has a rounded edge, giving the pencil the curved point that is appreciated by accountants and stenographers. One strip of sandpaper,



The Wright Pencil Sharpener.

It is said, will sharpen 400 points, and can be readily reversed or a new strip put on. The machine cuts the lead without breaking the point, and will also give any kind of a point, the short, stubby one of the schools and kindergartens, a sharper point for business men, a finer one for bookkeepers and a still longer finer point for draftsmen. These can all be made on the same machine without any adjusting. The principal features of the machine are the new curved point, any style desired, the low cost of maintenance and the fact that it is built in such a way that it will not easily get out of order. The machine weighs 9½ lb., and is put on the market by the Turner & Seymour Mfg. Company, Torrington, Conn.

## The Yankee Can and Bottle Opener.

Taylor Mfg. Company, Hartford, Conn., is offering the combination can and bottle opener shown in Fig. 1. The blade is made from high quality steel and carefully



Fig. 1.—The Yankee Can and Bottle Opener.

sharpened, and can be used to open round or square cans. The hook on the top is used to remove the metal caps from beer and wine bottles, as shown in Fig. 2. The long handle gives enough leverage to make the operation easy.



Fig. 2.—Removing Cap from Bottle.

The corkscrew is made strong and tinned to prevent rusting. The tool is designed to retail for 10 cents.

The warehouse of the Pickett Hardware Co., Warren, Pa., was destroyed by fire last Saturday morning, causing a loss of about \$100,000. A large amount of powder and dynamite was stored in the building, and the explosions caused a rapid spread of the flames. The main store of the company was on fire several times, but the flames were extinguished with but little loss.

## PAINTS, OILS AND COLORS

## Animal, Fish and Vegetable Oils—

Animal, Fish and Vegetable Oils—	gal.
Linseed, City, raw.....	38 @39
City, Boiled.....	39 @40
State and Western, raw.....	37 @38
Raw Calcutta, in bbls.....	36 @37
Lard, Extra Prime, Winter.....	72 @73
Extra No. 1.....	47 @49
No. 1.....	40 @44
Cotton-seed, Crude, f.o.b. mills.....	22 1/2 @25
Summer Yellow, Prime.....	37 1/2 @38
Summer Yellow, off grades.....	36 @37
Sperm, Crude.....	53 @54
Natural Spring.....	41 @42
Bleached Spring.....	43 @44
Natural Winter.....	63 @65
Bleached Winter.....	66 @67
Bleached Winter, Extra.....	68 @69
Tallow, Prime.....	51 @53
Natural Winter.....	43 @44
Bleached Winter.....	45 @46
Extra Bleached Winter.....	47 @48
Menhaden, Brown, Strained.....	26 @27
Light, Strained.....	27 @28
Bleached, Winter.....	43 @44
Extra Bleached, Winter.....	45 @46
Southern.....	21 @22
Cocunut, Ceylon.....	8 1/2 @9
Cochin.....	9 @9 1/2
Cod, Domestic, Prime.....	30 @33
Newfoundland.....	35 @37
Red, Elaine.....	38 @42
Red, Saponified.....	5 1/2 @5 1/2
Olive, Italian, bbls.....	55 @57
Neatsfoot, Prime.....	48 @49
Palm, Logos.....	10 @11

## Mineral Oils—

Mineral Oils—	gal.
Black, 29 gravity, 25@30 cold test.....	10 1/2 @11 1/2
29 gravity, 15 cold test.....	11 1/2 @12 1/2
Summer.....	10 1/2 @11 1/2
Cylinder, light filtered.....	18 @19
Dark filtered.....	16 @17
Paraffine, 900-907 gravity.....	13 1/2 @14
903 gravity.....	12 1/2 @13
883 gravity.....	10 1/2 @10 1/2
Red.....	12 1/2 @14

## Miscellaneous—

Miscellaneous—	ton
Barytes:	
White, Foreign.....	18.50 @20.00
Amer. floated.....	19.00 @20.00
Off color.....	11.50 @15.50
Chalk, in bulk.....	3.00 @3.25
In bbls.....	100 lb 2.50 @2.75
China Clay, English.....	11.00 @17.00
Cobalt, Oxide.....	100 lb 2.50 @2.75
Whiting, Commercial.....	100 lb .43 @.48
Gilders.....	100 lb .50 @.55
Ex. Gilders.....	100 lb .55 @.60
Putty, Commercial—	100 lb
In bladders.....	\$1.70 @1.85
In bbls. or tubs.....	1.20 @1.40
In 1 lb to 5 lb cans.....	2.65 @2.95
In 12 1/2 to 50 lb cans.....	1.50 @1.90
Spirits Turpentine—	gal.
In Oil bbls.....	69 1/2 @70
In machine bbls.....	70 @70 1/2
Glue—	lb
Cabinet.....	.11 @15
Common Bone.....	7 @9
Extra White.....	.18 @24
Foot Stock, White.....	.11 @14
Foot Stock, Brown.....	8 @11
German Hide.....	12 @13
French.....	10 @40
Irish.....	13 @16
Low Grade.....	9 @12
Medium White.....	11 @17
Gum Shellac—	lb
Bleached Commercial.....	.47 @48
Bones, Dried.....	.67 @69
Button.....	.40 @60
Diamond L.....	.53 @55
Fine Orange.....	.50 @52
A. C. Garnet.....	.47 @7 1/2
Kala Button.....	.37 @38
G. A. L. Garnet.....	.45 @45 1/2
D. C.....	.55 @58
Octagon B.....	.53 @54 1/2
T. N.....	.48 @49 1/2
V. S. O.....	.54 @55
Colors in Oil—	lb
Black, Lampblack.....	.12 @14
Blue, Chinese.....	.26 @46
Blue, Prussian.....	.32 @38

Blue, Ultramarine.....	13 @18
Brown, Vandyke.....	11 @14
Green, Chrome.....	12 @16
Green, Paris.....	12 @21
Sienna, Raw.....	12 @15
Sienna, Burnt.....	12 @15
Umber, Raw.....	11 @14
Umber, Burnt.....	11 @14

## White Lead, Zinc, &amp;c.—

White Lead, Zinc, &c.—	lb
Lead, English white, in Oil.....	9 1/2 @10
Lead, American white, in Oil:	
Lots of 500 lb or over.....	@ 7 1/2
Lots less than 500 lb.....	@ 7 1/2
In Barrels.....	@ 6 1/2
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	@ 1 1/2
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	@ 1
Lead, White, in oil, 1 to 5 lb	
ass'ted tins, add to keg price.....	@ 1 1/2
Lead, American, Terms: For lots 12	
tons and over 1/4¢ rebate; and 2% for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2% for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lbs. net.....	3 @3
Lead, White, Dry, in bbls.....	6 1/2 @6 1/2
Zinc, American, dry.....	5 1/2 @5 1/2
Zinc, French:	
Antwerp, Red Seal, dry.....	8 1/2
Antwerp, Green Seal, dry.....	10 1/2
Paris, Red Seal, dry.....	9 1/2
Paris, Green Seal, dry.....	11
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over.....	13 1/2 @13 1/2
Lots of less than 1 ton.....	13 1/2 @13 1/2
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over.....	11 1/2 @11 1/2
Lots of less than 1 ton.....	12 1/2 @12 1/2
Discounts.—French Zinc.—Discounts	
to buyers of 10 bbl. lots of one or mixed	
grades. 1%: 25 bbls., 2%: 50 bbls., 4%:	
Dry Colors—	lb
Black, Carbon.....	5 @10
Black Drop, American.....	4 @6
Black Drop, English.....	5 @15

Black, Ivory.....	lb
Lamp, Coia.....	16 @20
Blue, Celestial.....	4 @6
Blue, Chinese.....	4 @6
Blue, Prussian.....	7 @30
Blue, Ultramarine.....	4 1/2 @15
Brown, Spanish.....	1 1/2 @1
Carmine, No. 40.....	2 1/2 @3.05
Green, Chrome, ordinary.....	3 1/2 @4
Green, Chrome, pure.....	17 @25
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	@ 7 1/2
Lots less than 500 lb.....	@ 7 1/2
Litharge, American, bbls.....	14 @15
Ocher, American.....	28 @30
American Golden.....	2 1/2 @3 1/2
French.....	1 1/2 @2 1/2
Foreign Golden.....	3 @4
Orange Mineral, English.....	10 @12
French.....	10 @12
German.....	8 1/2 @10
American.....	8 1/2 @10
Red, Indian, English.....	4 1/2 @5 1/2
American.....	3 @3 1/2
Red, Turkey, English.....	4 @10
Red, Tuscan, English.....	7 @10
Red, Venetian, Amer.....	100 lb \$1.50 @1.75
English.....	100 lb \$1.15 @1.75
Sienna, Italian, Burnt and	
Powdered.....	3 @9 1/2
Italian, Raw, Powdered.....	3 @9 1/2
American, Raw.....	1 1/2 @2
American Burnt and Pow.....	1 1/2 @2
Talc, French.....	\$17.00 @25.00
American.....	\$17.00 @25.00
Terra Albs, French.....	\$100 lb 30 @1.00
English.....	\$100 lb 30 @1.00
American.....	\$100 lb 30 @1.00
American.....	\$100 lb 30 @1.00
Umber, T'key, Bot. & Pow.....	2 1/2 @3 1/2
Turkey, Raw and Powdered.....	2 1/2 @3 1/2
Burnt, American.....	1 1/2 @2
Raw, American.....	1 1/2 @2
Yellow Chrome.....	12 @16
Vermilion, American Lead.....	10 @25
Onic-silver, bulk.....	6 @6
Onic-silver, bag.....	6 @6
English, Import.....	65 @70
Chinese.....	\$9.90 @1.00



# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1906, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful, as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00.....33%  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%  
Taplin's Perfection.....25%

**Ammunition**—See Caps, Cartridges, Shells, &c.

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers,  $\frac{1}{2}$  doz. pairs, Nos. 1, \$0.75; 2, \$0.60; 4, \$1.00; 5, \$0.50.  
Fernald Quick Shifter,  $\frac{1}{2}$  doz. pairs.....\$2.00@3.00

## Anvils—American—

Eagle Anvils..... $\frac{1}{2}$  lb? @7%  
Hay-Budden, Wrought.....9%  
Trenton..... $\frac{1}{2}$  lb 9% @9%

## Imported—

Peter Wright & Sons,  $\frac{1}{2}$  lb. 84 to 340 lb., 11¢; 350 to 600 lb., 11%¢.

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15%  
Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths—

Livingston Nail Co.....33%

## Augers and Bits—

Com. Double Spur.....75@75%  
Jennings' Patn., reg. finish.....60@100

Black Lip or Blued.....60@100

Boring Mach. Augers.....70@100

Car Bits, 12-in. twist.....50@100

Ford's Auger and Car Bits.....40@50

Fl. Washington Auger Co., Concord's.....25%

Fortner Pat. Auger Bits.....25%

C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list.....25%

No. 30, R. Jennings' list.....40@75

Russell Jennings.....25@100

L'Hommedieu Car Bits.....45%

Mayhew's Countersink Bits.....45%

Millers Falls.....50@100

Pugh's Black.....25%

Pugh's Jennings' Pattern.....25%

Snell's Auger Bits.....40%

Snell's Bell Hangers' Bits.....40%

Snell's Car Bits, 12-in. twist.....60%

Snell's King Auger Bits.....50%

Wright's Jennings Bits.....50%

**Bit Stock Drills—**  
See Drills, Twist.

## Expansive Bits—

Clark's small, 18; large, 32.....50@100

Clark's Pattern, No. 1,  $\frac{1}{2}$  doz. 50¢  
No. 2, 18.....60@100

Ford's, Clark's Pattern.....60%

C. E. Jennings & Co., Steer's Pat. 25%  
Lavigne Pat., small size, 18.00; large size, 32.00.....70@100

Swan's.....60%

## Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25

German Pattern, Nos. 1 to 10, \$4.00; 11 to 13, \$5.75

## Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00

Ames.....25@100

Universal.....20%

Wood's Universal.....25%

## Ship Augers and Bits—

Ship Augers.....45@50

Ford's.....35@45

C. E. Jennings & Co.:  
L'Hommedieu's.....15%

Watrous'.....33@75

Snell's.....40%

## Awl Hfts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00

Unhdd, Shlderd.....gro. 63@66

Unhdd, Patent.....gro. 66@70

Peg Awls:  
Unhdd, Patent.....gro. 51@54

Unhdd, Shlderd.....gro. 65@70

Scratch Awls:  
Handled, Com.....gro. \$3.50@4.00

Handled, Socket.....gro. \$11.50@12.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

Single Bit, base weights:  
First Quality.....\$4.75@5.00

Second Quality.....\$4.25@4.50

Double Bit, base weights:  
First Quality.....\$7.00@7.50

Second Quality.....\$6.50@6.75

## Axle Grease—

See Grease, Axle

## Axles—

Concord, Loose Collar.....4%  
Concord, Solid Collar.....4%  
No. 1 Common, Loose.....3%  
No. 1 Common, New Style.....4%  
No. 2 Solid Collar.....4%  
Half Patent.....4%

Nos. 7, 8, 11 and 12.....75@75%  
Nos. 13 to 14.....70@100

Nos. 15 to 18.....75@100

Nos. 19 to 22.....75@100

## Boxes, Axle—

Common and Concord, not turned lb., 4%  
Common and Concord, turned lb., 5%  
Half Patent.....lb., 8%

## Bait—

Heudryx:  
A Bait.....20%  
B Bait.....25%  
Competitor Bait.....20@30

## Balances—

Caldwell new list.....50%  
Pullman.....50@100

## Spring—

Spring Balances.....50@100

Chatillon's:  
Light Spg. Balances.....50@100

Straight Balances.....40@50

Circular Balances.....50@100

Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—

Steel Crowbars, 10 to 40 lb. per lb., 3@3%

## Towel

No. 10 Ideal, Nickel Plate.....gro. \$3.50

## Beams, Scale—

Scale Beams.....45@100

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 13 Wire Tinned  $\frac{1}{2}$  doz. \$0.75

No. 12 Wire Coppered  $\frac{1}{2}$  doz. \$0.75

Tinned.....\$0.85

No. 11 Wire Coppered  $\frac{1}{2}$  doz. \$1.10

Tinned.....\$1.20

No. 10 Wire Galvanized  $\frac{1}{2}$  doz. \$1.50

Western W. G. Co.:  
No. 1 Electric..... $\frac{1}{2}$  doz. \$7.50

No. 2 Buffalo..... $\frac{1}{2}$  doz. \$9.00

No. 3 Perfection Dust..... $\frac{1}{2}$  doz. \$8.00

## Egg—

Holt-Lyon Co.:  
Holt, per doz., No. 5, \$0.80; No. 1, Jap'd, \$1.15; No. 1, Tin'd, \$1.40;

No. B, Jap'd, \$1.85; No. 2, Tin'd, \$2.25; No. 6, \$1.60.

Lyon, Jap'd, per doz., No. 2, \$1.35.

Taplin Mfg. Co.:  
Improved Dorer, per gro., No. 61, \$6.00; No. 75, \$6.50; No. 100, \$7.00;

No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel, \$15.00;

Tin'd, \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd, \$9.50; No. 300, Mammoth, per doz., \$25.00.

Turner & Seymour Mfg. Co.:  
T. & S. Dorer.....\$6.00

Western W. G. Co.,  $\frac{1}{2}$  gro., Buffalo, No. 2, \$6.00; Perfection, No. 3, \$9.00.

Wonder (R. M. Co.),  $\frac{1}{2}$  gro., net, \$6.25

## Bellows—

Blacksmith, Standard List.....60@100

## Hand—

Inch. 6 7 8 9 10 }  
Doz. \$4.75 5.70 6.65 7.60 8.55 }  
Molders—

Inch. 9 10 11 }  
Doz. \$8.00 9.00 10.50 12.50 14.50 }  
Bells—

Ordinary Goods.....75@100

High grade.....70@100

Jersey.....75@100

Texas Star.....50%

## Door—

Abbe's Gong.....45%

Barton Gong.....50%

Home, R. & E. Mfg. Co.'s.....55@100

Trip Gong.....50@100

Yankee Gong.....55%

## Hand—

Polished, Brass.....60@100

White Metal.....60%

Nickel Plated.....50@100

Swiss.....60@100

## Cone's Globe Hand Bells.....33% @ 33%

## Silver Chime.....33% @ 33%

## Miscellaneous—

Farm Belts.....lb., 2% @ 2%

Church and School.....90%

American Tube & Stamping Co. Gongs.....10%

Fable Call Bells.....50@100

## Belting—

Extra Heavy, Short Lap.....60@65

Regular Short Lap.....60@100

Standard.....10%

Light Standard.....70@75

Cut Leather Lacing.....45%

Leather Lacing Sides, per sq. ft. 25¢

## Rubber—

Agricultural (Low Grade).....75@75

Common Standard.....70@70

Standard.....60@60

Extra.....60@60

High Grade.....50@50

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

Tire—

Detroit Perfected Tire Bender.....40%

Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25;

No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

Green River Tire Benders and Upsetters.....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1906 list:  
Chain, Parts, Spokes.....50%

Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks—

Common Wooden.....75%

Haritz St. Tackle Blocks.....50@50

B. & L. B. Co.:  
Boston Wood Snatch 50%; Eclipse Steel, 75%; Hollow Steel, 50@100;

Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50@100; Wire Rope Snatch, 50%.

Lang's Patent Automatic Lock and Junior.....30%

Stowell's Novelty, Mal. Iron.....50%

Stowell's Loading.....50@100

See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c.....40%

Paper Embossed.....40@100

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Paufel & Esser Co.....33%

## Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread):  
% x 6 and smaller.....75@—

Larger and Longer.....60@100

Phila. Eagle \$3.00 list May 21, '90

Bolt Ends.....65@65

Machine, % x 4 and smaller.....75@—

Machine, larger and longer.....65@65

## Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:

Inch. 3 4 5 6 8 }  
Per doz. \$1.30 .35 .45 .60 .80 }  
Cast Iron Spring Foot, Jap'd:

Inch. 6 8 10 }  
Per doz. \$1.20 1.30 2.25 }  
Cast Iron Chain, Flat, Japanned:

Inch. 6 8 10 }  
Per doz. \$1.00 1.40 1.65 }  
Cast Iron Flat Shutter, Jap'd, Brass Knob:

Inch. 6 8 10 }  
Per doz. \$0.75 .95 1.25 }  
Wrought Barrel Jap'd.....80@80

Barrel Bronzed.....50@50

Spring.....70@70

Shutter.....50@50

Square Neck.....75@75

Square.....65@65

Ives' Patent Door.....50%

## Plow and Stove—

Plow.....60@100

Stove.....82% @ 82%

## Tire—

Common Iron.....90%

Norway Iron.....90%

American Sew Company:  
Norway Phila., list Oct. 16, '81.....90%

Eagle Phila., list Oct. 16, '81.....90%

May State, list Dec. 28, '90.....90%

**Calipers—See Compasses.****Calks, Toe and Heel—**

Blunt, 1 prong... per lb. 4¢  
 Sharp, 1 prong... per lb. 4¢  
 Burke's Blunt, 4¢; Sharp, 4¢  
 Gaultier, 4¢; Sharp, 4¢  
 Perkins, Blunt, 1 lb. 3.65¢; Sharp, 1.15¢

**Can Openers—**

See Openers, Can.

**Cans, Milk—**

5 8 10 gal.  
 Illinois Pattern... \$1.35 1.85 2.05 each.  
 New York Pattern... 1.50 2.20 2.45 each.  
 Baltimore Pattern... 1.50 2.20 2.45 each.  
 Dubuque... 1.35 1.60 1.75 each.

**Cans, Oil—**

Buffalo Family Oil Cans:  
 3 5 10 gal.  
 \$3.00 60.00 120.00 gro. net.

**Caps, Percussion—**

Eley's E. B. 5¢  
 G. D. 5¢  
 F. L. 5¢  
 G. E. 5¢  
 Musket 5¢

**Primers—**

Berdan Primers, \$2 per M. 20%  
 B. L. Caps (Sturtevant Shells)  
 \$2 per M. 20%  
 All other primers per M. \$1.52 @ 1.60

**Cartridges—**

Blank Cartridges:  
 32 C. F. \$5.50 10¢  
 38 C. F. \$7.00 10¢  
 22 cal. Rim. \$1.50 10¢  
 32 cal. Rim. \$2.75 10¢  
 B. B. Caps, Con. Ball, Swgd. \$1.90  
 B. B. Caps, Round Ball, \$1.49  
 Central Fire 25¢  
 Target and Sporting Rifle 15¢  
 Primed Shells and Bullets 15¢  
 Rim Fire, Sporting 50¢  
 Rim Fire, Military 15¢

**Casters—**

Bed 70¢  
 Plate 60¢  
 Philadelphia 75¢  
 Acme Ball Bearings 33¢  
 Boss 70¢  
 Boss Anti-Friction 70¢  
 Gen (Roller Bearing) 80¢  
 Martin's Patent (Phoenix) 45¢  
 Standard Ball Bearings 30¢  
 Tucker's Patent low list 30¢  
 Yale (Double Wheel) low list 50¢

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coil—**

American Coil, Straight Link:  
 3-16 1/4 5-16 3/4 7-16 9-16  
 \$3.70 5.90 4.95 4.20 4.05 3.95 3.90  
 1/2 3/4 1 1 1/4 1 1/2 1 3/4 inch.  
 \$3.85 3.70 3.65 3.80  
 German Coil 60¢ @ 10¢ @ 70%

**Halter—**

Halter Chains 60¢ @ 50¢ @ 10¢  
 German Pattern Halter Chains,  
 list July 21, '97 60¢ @ 10¢ @ 10¢  
 Covert Mfg. Co. 36¢ @ 5%

**Cow Ties—**

See Halters and Ties.

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pr.  
 6 1/2-6 3/4, Straight, with ring \$25.00  
 6 1/2-6 3/4, Straight, with ring \$25.00  
 6 1/2-8 1/4, Straight, with ring \$30.00  
 6 1/2-8 1/4, Straight, with ring \$35.00

NOTE—Add 2¢ per pair for Hooks.  
 Twist Traces: add per pair for Nos. 2  
 and 3, 2¢; No. 1, 3¢; No. 4, 4¢ to price of  
 Straight Link.

Eastern Standard Traces, Wag-  
 on Chain, &c. 60¢ @ 10%

**Miscellaneous—**

Jack Chain, list July 10, '93:  
 Iron 60¢ @ 10%  
 Brass 60¢ @ 10%  
 Safety Chain 70¢ @ 10%  
 G. A. Pump Chain 1 lb. 4¢ @ 1/2¢  
 Covert Mfg. Co.:  
 Breast, Halter, Heel, Rein, Stal-  
 lion 40%  
 Oneida Community:  
 Am. Dog Leads and Kennel Chains,  
 40¢ @ 10%  
 Niagara Dog Leads and Kennel  
 Chains 45¢ @ 10%  
 Wire Goods Co.:  
 Dog Chain 70¢ @ 10%  
 Universal Dbl.-Jointed Chain 50%

**Chain and Ribbon, Sash—**

Oneida Community:  
 Copper Chain, 60¢ @ 5%; Steel Chain,  
 60%  
 Pullman:  
 Bronze Chain, 60%; Steel Chain,  
 60¢ @ 10%  
 Sash Chain Attachments, per set, 8¢  
 Aluminum Sash Ribbon, per 100  
 ft. \$1.25 @ \$3.00  
 Sash Ribbon Attachments, per set, 8¢

**Chalk—(From Jobbers.)**

Carpenter's Blue... 45¢ @ 6¢  
 Carpenter's Red... 40¢ @ 6¢  
 Carpenter's White... 35¢ @ 6¢  
 Some jobbers sell at lower prices  
 than above.

**Checks, Door—**

Bardsley's... 45%  
 Pullman, per gro. \$4.00  
 Russwin... 40%

**Chests, Tool—**

American Tool Chest Co.:  
 Boys' Chests, with Tools... 55%  
 Youths' Chests, with Tools... 40%  
 Gentlemen's Chests, with Tools... 30%  
 Farmers' Chests, etc., Chests,  
 with Tools... 20%

Machinists' and Pipe Fitters'  
 Chests, Empty... 30%  
 Tool Cabinets & Co's Machinists'  
 Tool Chests... 33% @ 10%

**Chisels—**

Socket Framing and Firmer  
 Standard List... 75¢ @ 10¢ @ 75¢ @ 10¢  
 st. bro. 30%  
 Charles Buck Edge Tool Co. 30%  
 C. E. Jennings & Co.:  
 Socket Firmer No. 10... 60%  
 Socket Framing No. 15... 60%  
 Swan's... 75%  
 L. & J. J. White Co. 30¢ @ 10%

**Tanged—**

Universal Firmers... 33 1/3-40%  
 Buck Bros. 30%  
 Charles Buck Edge Tool Co. 30%  
 C. E. Jennings & Co. Nos. 101, 181... 25%  
 L. & J. J. White Co. 25¢ @ 5%

**Cold—**

Cold Chisels, good quality 13¢ @ 15¢  
 Cold Chisels, fair quality 11¢ @ 12¢  
 Cold Chisels, ordinary 9¢ @ 10¢

**Chucks—**

Almond Drill Chucks... 35%  
 Almond Turret Six-Tool Chuck... 35%  
 Bench Pat., each \$8.00... 35%  
 Empire... 25%  
 Blacksmiths'... 25%  
 Jacobs' Drill Chucks... 35%  
 Pratt's Positive Drive... 25%  
 Skinner Patent Chucks:  
 Independent Lathe Chucks... 40%  
 Universal Reversible Jaws... 40%  
 Combination, Reversible Jaws... 40%  
 Drill Chucks, New Model, 25%:  
 Standard, 40¢ @ 10%; Skinner Pat.  
 25%; Positive Drive... 40%  
 Planer Chucks... 30%  
 Face Plate Jaws... 40%  
 Standard Tool Co.:  
 Improved Drill Chuck... 45%  
 Union Mfg. Co.:  
 Combination, Nos. 1, 2, 3, 4, 5, 6,  
 7, 8 and 17, 40%; No. 21... 35%  
 Scroll Combination, Nos. 82 and  
 84... 30%  
 Geared Scroll, Nos. 33, 34 and 35... 30%  
 Independent Iron, Nos. 18 and 318... 40%  
 Independent Steel, No. 61... 30%  
 Union Czar Drill, Nos. 000, 101,  
 103... 35%  
 Universal 11, 12, 16, 17, 13, 14, 15... 40%  
 Universal, No. 42... 35%  
 Iron Face Plate Jaws Nos. 28, 30,  
 48 and 50... 40%  
 Steel Face Plate Jaws, Nos. 70 and  
 72... 35%  
 Westcott Patent Chucks:  
 Lathe Chucks... 50%  
 Little Giant Auxiliary Drill... 50%  
 Little Giant Double Grip Drill... 50%  
 Little Giant Drill, Improved... 50%  
 Oneida Drill... 50%  
 Scroll Combination Lathe... 50%

**Clamps—**

Adjustable Hammers... 20¢ @ 20¢ @ 5%  
 Carriage Makers', P. S. & W.  
 Co. 40¢ @ 10% @ 50%  
 Besly, Parallel... 33% @ 10%  
 Lineman's, Utica Drop Forge & Tool  
 Co. 40%  
 Wood Workers, Hammers... 40¢ @ 10%  
 Saw Clamps, see Vises, Saw Filers.

**Cleaners, Drain—**

Iwan's Champion, Adjustable... 55%  
 Iwan's Champion, Stationary... 45%

**Sidewalk—**

Star Socket, All Steel... \$4.05 net  
 Star Shank, All Steel... \$3.24 net  
 W. & C. Shank, All Steel... \$3.24 net  
 7 1/2 in., \$3.00; 8 in., \$3.25.

**Cleavers, Butchers—**

Poster Bros... 30%  
 Fayette R. Plumb... 30%  
 L. & J. J. White Co. 30%

**Clippers, Horse and Sheep—**

Chicago Flexible Shaft Company:  
 Chicago Horse, each... \$8.75  
 1902 Chicago Horse, each... \$10.75  
 20th Century Horse, each... \$5.00  
 Lightning Belt Horse, each... \$15.00  
 Chicago Belt Horse, each... \$20.00  
 Stewart's Enclosed Gear  
 Horse, each... \$4.75  
 Stewart's Patent Sheep Shear-  
 ing Machine, each... \$12.75

**Clips, Axle—**

Regular Styles, list July 1, '05. 80%

**Cloth and Netting, Wire—**

See Wire, &amp;c.

**Cocks, Brass—**

Hardware Hat:  
 Plain Bibbs, Globe, Kerosene,  
 Racking, Liquor, Bottling,  
 &c. 70%  
 Compression Bibbs... 65¢ @ 10%

**Coffee Mills—**

See Mills, Coffee.

**Collars, Dog—**

Nickel Chain, Walter B. Stevens &  
 Son's list... 40%  
 Leather, Walter B. Stevens & Son's  
 list... 60%

**Combs, Curry—**

Metal Stamping Co. 40%

**Compasses, Dividers, &c.—**

Ordinary Goods... 70¢ @ 10¢ @ 75%  
 Bemis & Call Hdw. & Tool Co.:  
 Dividers... 65%  
 Calipers, Double, 65%; Inside or  
 Outside... 65%  
 Calipers, Wing... 60%  
 Compasses... 60%  
 Wm. Schollhorn Co. 50%  
 Excelsior Dividers... 55%  
 Lodi Dividers... 75%

**Conductor Pipe—**

L. C. L. to Dealers:

Galv. Charcoal Copper.  
 Eastern: 14, 16, 20 oz.  
 60¢ @ 30% 60¢ @ 2 1/2% 30¢ @ 10¢ @ 2 1/2%  
 Central: 70% 55¢ @ 7 1/2% 30¢ @ 16%  
 Western and Southern:  
 65¢ @ 10% 55¢ @ 2 1/2% 30¢ @ 7 1/2%  
 So. Western:  
 62 1/2¢ @ 7 1/2% 50¢ @ 5% 30¢ @ 5%  
 Terms, 60 days; 2% cash 10 days. Fac-  
 tor, shipments generally delivered.  
 See also Eave Troughs.

**Coolers, Water—**

Gal. each. 2 3 4 6 8  
 Labrador... \$1.20 \$1.50 \$1.80 \$2.10 \$2.70  
 Gal... 2 3 4 6 8  
 Iceland, ea. \$1.80 \$2.10 \$2.40 \$3.00  
 Gal... 2 3 4 6 8  
 Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.90  
 Galvanized, Lined, side handles,  
 Gal... 2 3 4 6 8  
 Each... \$1.95 \$2.15 \$2.40 \$3.30 \$4.15  
 White Enamelled, 25%; Agate Lined, 25%

**Coopers' Tools—**

See Tools, Coopers.

**Coopers' Soldering—**

Soldering Coppers, 3 lbs. to pair  
 and heavier, 23¢; lighter than  
 3 lb. to pair... 25¢

**Cord—Sash—**

Braded, Drab... 1 lb. 35¢  
 Braded, White, Com. Nos. 8  
 to 12, 24¢; No. 7, 24 1/2¢; No. 6,  
 25 1/2¢  
 Cable Laid Italian... 1 lb. 16¢

Common India... 1 lb. 10¢ @ 10 1/2%  
 Cotton Sash Cord, Twisted, 17¢ @ 10 1/2%  
 Patent Russia... 1 lb. 6 1/2¢  
 Cable Laid Russia... 1 lb. 6 1/2¢  
 India Hemp, Br'd'd... 1 lb. 18¢ @ 18 1/2%  
 India Hemp, Twisted... 1 lb. 12¢ @ 13¢  
 Patent India, Twisted... 1 lb. 12¢ @ 13¢  
 Anniston Cordage Co.:  
 Braded, Nos. 8 to 12, 20¢; No. 7,  
 20 1/2¢; No. 6, 20 25¢; 3/4 doz. 50 ft.  
 Oriole, 20¢; 50 ft., Columbia, 20¢;  
 50 ft., Jectors, 10¢; 50 ft., 6-Thread,  
 \$1.10; 60 ft., 3-Thread, \$0.95; 50 ft.,  
 Manila, \$1.10; 60 ft., Jute, \$0.75.  
 Pearl Braded, cotton, No. 6, 1 lb. 25¢  
 25¢; No. 7, 25¢; Nos. 8 to 12, 24 1/2¢  
 Eddystone Braded, Nos. 8, 9 and  
 10, 25¢; 7, 25 1/2¢; 6, 25 1/2¢.  
 Harmony Cable Laid Italian, Nos. 7  
 to 10... 1 lb. 23¢  
 Pullman:  
 Wire Sash Cord... 10%  
 Sash Cord Attachments, per doz. 10¢  
 Samson, Nos. 8 to 12:  
 Braded, 1 lb. Drab Cotton,  
 55¢; Italian Hemp, 40¢ @ 60%  
 50¢; Linen, 65¢; White Cot-  
 ton, 50¢; Spot Cord... 50¢  
 Massachusetts, White... 1 lb. 40¢  
 Massachusetts, Drab... 1 lb. 45¢  
 No. 7, 28¢; No. 6, 30¢.  
 Phoenix, White, Nos. 8 to 12, 27¢;  
 Silver Lake, per lb.:  
 A. Drab, 45¢; A. White, 40¢  
 B. Drab, 40¢; B. White, 35¢  
 Italian Hemp, 40¢; Linen... 57 1/2¢  
 See also Chain and Ribbon.

**Wire, Picture—**

List July 10, 1906... 85¢ @ 10¢ @ 10¢  
 Hendryx Standard Wire Picture Cord,  
 old list, 85¢ @ 10%

**Cradles—**

Grain 40¢ @ 12 1/2%

**Crayons—**

White Round Crayons, Cases, 100  
 gro., \$6.50 @ \$7.50 at factory, but  
 lower prices made by jobbers  
 Zelnicker's Lumber... 70%  
 White and Purple, Indelible... \$7.50  
 Blue, Red, Green, Yellow and  
 Terra Cotta, \$6.50; Black... \$4.00  
 Genuine Soapstone, Metal Workers,  
 5 in. x 3/4 in. Round, \$2.50; 5 in. x  
 1/4 in. Square, \$1.75; 5 x 1/2 x 3-16,  
 \$2.50; 5 x 1 1/4 x 3-16... \$3.00

**Crooks, Shepherds—**

Fort Madison, per doz., Heavy, \$7.00;

Light \$6.50

**Crow Bars—See Bars, Crow.****Cultivators—**

Victor Garden... 50%

**Cutlery, Table—**

International Silver Company:  
 No. 12 M'd'm Knives, 1817, 3 doz. \$3.50  
 Star, Eagle, Rogers & Hamilton  
 and Anchor... 3 doz. \$3.00  
 Wm. Rogers & Son... 3 doz. \$2.50

**Cutters—Glass—**

H. H. Mayhew Co. 40%  
 Red Devil... 50%  
 Smith & Hemenway Co. 50%  
 Woodward... 40%

**Meat and Food—**

American... 30%  
 Nos. 1 2 3 4 B 5  
 Each... \$5 \$7 \$10 \$25 \$50 \$60  
 Enterprise:  
 Nos. 5 10 12 22 32  
 Each... \$2 \$3 \$2.75 \$1.50 \$6 25¢ @ 7 1/2%  
 No. 202, \$1.50... 40¢ @ 7 1/2%  
 Dixon's... 10¢ @ 50%  
 Nos. 1 2 3  
 Ideal... \$14.00 \$17.00 \$19.00 \$30.00  
 Little Giant... 40¢ @ 10¢ @ 50%  
 Nos. 305 310 312 320 322  
 \$35.00 \$48.00 \$44.00 \$72.00 \$68.00  
 N. E. Food Choppers... 25%  
 New Triumph No. 605, 3 doz. \$24.00  
 Russwin Food, No. 1, \$24.00; No. 2,  
 \$27.00... 45¢ @ 10¢ @ 10%  
 Woodruff's... 3 doz. 40¢ @ 50%  
 Nos. 100 150  
 Enterprise Beef Shavers... 25¢ @ 30%

**Slaw and Kraut—**

Henry Diston & Sons:  
 Slaw and Kraut Cutters, Corn  
 Graters, &c. 35%  
 J. M. Mast Mfg. Co.:  
 Slaw Cutters, 1 Knife... 30 doz. \$3.00  
 Combined Slaw Cutter and Corn  
 Grater... 30 doz. \$4.00  
 Tucker & Dorsey Mfg. Co.:  
 Kraut Cutters... 40%  
 Slaw Cutters, 1 Knife... gr. \$18 @ \$20  
 Slaw Cutters, 2 Knife... gr. \$22 @ \$30

**Tobacco—**

All Iron, Cheap... doz. \$4.25 @ \$4.50  
 Enterprise... 25¢ @ 30%  
 National, 3 doz., No. 1, \$21; No. 2,  
 \$18... 10%

**Diggers, Post Hole, &c.—**

Diston's:  
 Rapid, 3 doz., \$24.00... 25%  
 Samson, 3 doz., \$34.00... 25%  
 Iwan's Improved Post Hole Auger... 40%  
 Vaughan Pattern Post Hole Augers...  
 Perfection Post Hole Diggers... 8¢  
 doz. \$8.25  
 Split Handle Post Hole Diggers...  
 doz. \$7.25  
 Kohler's, 3 doz., Universal \$14.00;  
 Little Giant, \$12.00; Hercules,  
 \$10.00; Invincible, \$9.00; Rival,  
 \$8.00; Pioneer... \$7.00  
 Never-Break Post Hole Diggers...  
 doz., \$24.00... 60%

**Dividers—See Compasses.****Drawers, Money—**

Tucker's Pat. Alarm Till No. 1, 3  
 doz., \$18; No. 2, \$15; No. 3, \$12;  
 No. 4, \$18.

**Drawing Knives—**

See Knives, Drawing.

**Dressers, Emery Wheel—**

Diamond Emery Wheel Dressers... 35%

Diamond Wheel Dresser Cutters... 35%

**Drills and Drill Stocks—**

Blacksmiths' Common Drilling  
 Machines... \$1.50 @ \$1.75  
 Breast, Miners Falls... 40%  
 Breast, P. S. & W. 40%  
 Goodell Automatic Drills... 40¢ @ 10¢ @ 10%  
 Johnson's Automatic Drills, Nos. 2  
 and 3... 16%  
 Johnson's Drill Points... 16%  
 Millers Falls Automatic Drills... 33% @ 10%  
 Ratchet, Curtis & Curtis... 25%  
 Ratchet, Parker's, 40%; Weston's, 40%  
 Ratchet, Weston's, Style H Im-  
 proved... 40%  
 Ratchet, No. 012... 40%  
 Ratchet, Whitney's, P. S. & W. 50%  
 Whitney's Hand Drill... 1 lb. \$10.00;  
 Adjustable, No. 10, \$12.00... 35%

**Twist Drills—**

Bit Stock... 60¢ @ 10¢ @ 10%  
 Taper and Straight Shank...  
 60¢ @ 10¢ @ 10%

**Drivers, Screw—**

Screw Driver Bits, per doz. 45¢ @ 50¢  
 Balsey's Screw Holder and Driver, 3  
 doz., 2 1/2-in., \$6; 4-in., \$7.50; 6-in.,  
 \$9.  
 Buck Bros' Screw Driver Bits... 30%  
 Champion... 30%  
 Diston's... 70%  
 Edson... 60%  
 Fray's Hol. H'die Sets, No. 3, \$12.50  
 Ford's Brace Screw Drivers... 40¢ @ 10%  
 Gay's Double Action Ratchet... 35%  
 Goodell's Auto. 50¢ @ 10¢ @ 10%  
 Hurwood... 40%  
 Mayhew's Black Handle... 40%  
 Mayhew's Monarch... 40%  
 Millers Falls, Nos. 20 and 21... 25¢ @ 10%  
 Millers Falls, Nos. 11, 12, 41, 42, 15¢ @ 10%  
 New England Specialty Co. 50%  
 Smith & Hemenway Co. Never-  
 turn, 40¢ @ 5%; Elmora... 50%  
 H. D. Smith & Co.'s Perfect H'die... 40%  
 Stanley R. & L. Co.'s:  
 No. 61, Varn. Handles, 65%; No.  
 80, 75%; Victor, 55%; Defiance, 70%  
 Nos. 7565 to 1568, 50%; No. 7540,  
 40¢ @ 10%

**Eave Trough, Galvanized—**

Territory. L. C. L. Galvanized  
 Galv. Charcoal Copper.  
 Steel. Iron. 14, 16, 20 oz.  
 Eastern:  
 80% 70¢ @ 5% 30¢ @ 10¢ @ 2 1/2%  
 Central:  
 75¢ @ 10¢ @ 7 1/2% 70% 30¢ @ 10%  
 Western and Southern:  
 70¢ @ 20¢ @ 7 1/2% 65¢ @ 15¢ @ 2 1/2% 30¢ @ 7 1/2%  
 So. Western:  
 70¢ @ 20% 65¢ @ 2 1/2% 30¢ @ 5%  
 Terms—2% for cash. Factory ship-  
 ments generally delivered.  
 See also Conductor Pipe and Elbows.

**Elbows and Shoes—**

Factory shipments, all territories:  
 Galv. Steel and Galv. C.  
 Standard Gauge... 60¢ @ 10%  
 No. 20... 25%  
 No. 21... 25%  
 No. 22... 10%  
 Copper... 50%

**Elbows, Stove Pipe—**

Dover, one piece (R. M. Co.)... 10¢ @ 10%



**Extractors, Lemon Juice****Fasteners, Blind—**  
See Squeezers, Lemon.

Zimmerman's ..... 50¢10%  
Walling's ..... 40¢10%

**Cord and Weight—**  
Ives ..... 33%**Faucets—**

Cork Lined ..... 50¢50¢10%  
Metallic Key, Leather Lined ..... 60¢10¢70%  
Red Cedar ..... 40¢10¢50%  
Petroleum ..... 70¢10¢75%  
B. & L. B. Co.:  
Metal Key ..... 60¢10%  
Star ..... 50¢10%  
West Lock ..... 50¢10%  
John Sommer's Peerless Tin Key ..... 40%  
John Sommer's Boss Tin Key ..... 50%  
John Sommer's Victor Mtl. Key ..... 50¢10%  
John Sommer's Duplex Metal Key ..... 40%  
John Sommer's Diamond Lock ..... 40%  
John Sommer's I. X. L. Cork Lined ..... 50%  
John Sommer's Reliable Cork Lined ..... 50%  
John Sommer's Chicago Cork Lined ..... 50%  
John Sommer's O. K. Cork Lined ..... 50%  
John Sommer's No Brand, Cedar ..... 50%  
John Sommer's Perfection, Cedar ..... 40%  
McKenna, Brass:  
Burglar Proof, N. P. ..... 25%  
Improved, 1/2 and 3/4 inch ..... 25%  
Self Measuring:  
Enterprise, 1/2 doz. \$36.00 ..... 40¢10%  
Lane's, 1/2 doz. \$36.00 ..... 40¢10%  
National Measuring, 1/2 doz. \$36.00 ..... 40¢10%

**Felloe Plates—**

See Plates, Felloe.

**Files— Domestic—**

List Nov. 1, 1899.  
Best Brands ..... 70¢10¢75¢10%  
Standard Brands ..... 75¢10¢75¢10¢10%  
Lower Grade ..... 75¢10¢10¢80¢10%

**Imported—**

Stude's Tapers, Stude's List, July 24, '97 ..... 33 1-5¢40%

**Fixtures, Fire Door—**

Richards Mfg. Co.:  
Universal, No. 103; Special, No. 104 ..... \$3.75  
Fusible Links, No. 96 ..... 30%  
Expansion Bolts, No. 107 ..... 50¢10%

**Grindstone—**

Net Prices:  
Inch ..... 15 17 19 21  
Per doz. ..... \$3.25 3.75 4.25 4.75  
P. S. & W. Co. ..... 30¢10¢40%  
Reading Hardware Co. ..... 60%  
Stowell's Giant Grindstone Hanger ..... 1/2 doz. \$6.00  
Stowell's Grindstone Fixtures, Extra Heavy, 40¢10%; Light ..... 50%

**Fodder Squeezers—**

See Compressors.

**Forks—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Easy Potato ..... 60¢10%  
Victor, Hay ..... 60¢15¢24%  
Victor, Manure ..... 60%  
Victor, Header ..... 60%  
Champion, Hay ..... 60%  
Champion, Header ..... 60%  
Champion, Manure ..... 60¢15¢24%  
Columbia, Hay ..... 70%  
Columbia, Manure ..... 70%  
Columbia, Spading ..... 70¢12%  
Hawkeye Wood Barley ..... 40%  
W. & C. Potato Digger ..... 60¢10%  
Acme Hay ..... 60¢10%  
Acme Manure, 4 time ..... 60¢10¢45%  
Dakota Header ..... 60¢20%  
Jackson Steel Barley ..... 60¢20%  
Kansas Header ..... 60%  
W. & C. Favorite Wood Barley ..... 40%  
Plated.—See Spoons.

**Frames— Saw—**

White, 8'x1 Bar, per doz. 75¢80¢  
Red, 8'x1 Bar, per doz. \$1.00¢1.25  
Red, 8'x1 Bar, per doz. \$1.40¢1.50

**Freezers, Ice Cream—**

Qt. .... 1 2 3 4 6  
Each ..... \$1.50 \$1.60 \$1.90 \$2.20 \$2.50

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans— See Pans, Fry.****Fuse—**

Per 1000 Feet.  
Hemp ..... \$2.75  
Cotton ..... 2.20  
Waterproof Spl. Taped. 3.65  
Waterproof Dbl. Taped. 4.40  
Waterproof Tpl. Taped. 5.15

**Gates, Molasses and Oil—**

Stebbins' Pattern ..... 80¢10%

**Gauges—**

Marking, Mortise, &c. 50¢50¢10%  
Chapin-Stephens Co.:  
Marking, Mortise, &c. 50¢50¢10%  
Scholl's Patent ..... 50¢10¢50¢10¢10%  
Door Hangers ..... 50¢50¢10%  
Dixon's Marking, Mortise, &c. 67%  
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 30%  
Marking and Mortise ..... 50%  
Wire, Brown & Sharpe's ..... 25%  
Wire, Morse's ..... 25%  
Wire, P. S. & W. Co. .... 37%

**Gimlets— Single Cut—**

Numbered assortments, per gro.

Nail, Metal, No. 1, \$2.00; 2, \$2.50  
Spike, Metal, No. 1, \$4.00; 2, \$4.50  
Nail, Wood Handled, No. 1, \$2.50; 2, \$2.60  
Spike, Wood Handled, No. 1, \$4.50; 2, \$4.60

**Glass, American Window**

See Trade Report.

**Glasses, Level—**

Chapin-Stephens Co. .... 60¢60¢10%

**Glue, Liquid Fish—**

Bottles or Cans, with Brush ..... 25¢10¢50%  
International Glue Co. (Martin's) ..... 40%

**Grease, Axle—**

Common Grade ..... gro. \$4.50¢6.00  
Dixon's Everlasting, 10-lb pails, ea. 86¢; in boxes, 1 doz., 1 lb. \$1.20;  
2 lb. ..... \$2.00  
Helmet Hard Oil ..... 25%

**Griddles, Soapstone—**

Pike Mfg. Co. .... 33%¢33%¢10%

**Grindstones—**

Bicycle Emery Grinder ..... \$6.50  
Bicycle Grindstones, each ..... \$2.50¢3.00  
Pike Mfg. Co.:  
Improved Family Grindstones, per inch, 1/2 doz. ..... \$2.00  
Pike Mower and Tool Grinder, each ..... \$6.00  
Royal Mfg. Co.:  
Alumund Grinding Machines, each, Nos. 61, \$1.75; 1A, \$2.50; 1B, \$5.00 ..... 30%  
Alumund Sickle Grinders, each, Nos. 20A, \$6.00; 20A Combined, \$6.50 ..... 30%  
Alumund Disc Grinders, each, \$2.50 ..... 30%

**Grips, Nipple—**

Perfect Nipple Grips ..... 40¢10¢2%

**Halters and Ties—**

Cow Ties ..... 60¢10¢60¢10¢5%  
Covert Mfg. Co.:  
Web ..... 45%  
Jute Rope ..... 45%  
Sisal Rope ..... 33%  
Cotton Rope ..... 45%  
Hemp Rope ..... 45%  
Oneda Community:  
Am. Coll and Halters ..... 40¢40¢5%  
Am. Cow Ties ..... 45¢50%  
Niagara Coll and Halters ..... 45¢50%  
Niagara Cow Ties ..... 45¢50%10¢45%

**Hammers—****Handled Hammers—**

Heller's Machinists' ..... 40¢10¢40¢10%  
Heller's Farmers ..... 40¢10¢40¢10%  
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75 ..... 50%  
Peck, Stow & Wilcox, Steel ..... 50%  
Payette R. Plumb:  
Plumb, A. E. Nail ..... 33%¢7%¢33%¢10¢7%  
Engineers' and ..... 50¢7%¢50¢10¢7%  
Machinists' Hammers ..... 50¢50¢10¢45%  
Riveting and Tappers ..... 40¢2%¢40¢10¢2%  
Heavy Hammers and Sledges:  
Under 3 lb., per lb., 50¢. 80¢10¢45%  
3 to 5 lb., per lb., 40¢. 80¢10¢45%  
Over 5 lb., per lb., 30¢. 80¢10¢45%  
Wilkinson's Smiths' ..... lb. 97¢10¢4%

**Handles—****Agricultural Tool Handles**

Axe, Pick, &c. .... 60¢10¢60¢10¢45%  
Hoe, Rake, &c. .... 45¢50%  
Fork, Shovel, Spade, &c.:  
Long Handles ..... 45¢50%  
D Handles ..... 50¢50¢45%  
Cross-Cut Saw Handles:  
Atkins' ..... 40%  
Champion ..... 50%  
Dixson's ..... 50%

**Mechanics' Tool Handles—**

Auger, assorted ..... gro. \$2.50¢\$3.00  
Brad Axl. .... gro. \$1.65¢\$1.75  
Chisel Handles, Ass'd, per gro.:  
Tanged Firmer, Apple, \$2.40¢  
\$2.65; Hickory ..... \$2.15¢\$2.40  
Socket Firming, Apple, \$1.75¢  
\$1.95; Hickory ..... \$1.45¢\$1.60  
Socket Framing, Hickory ..... \$1.60¢\$1.75  
File, assorted ..... gro. \$1.30¢\$1.40  
Hammer, Hatchet, &c. .... 60¢10¢60¢10¢45%  
Hand Saw, Varnished, doz. 80¢85¢; Not Varnished ..... 65¢75¢  
Plane Handles:  
Jack, doz. 30¢; Jack, Bolted, 75¢  
Fore, doz. 45¢; Fore, Bolted, 90¢  
Chapin-Stephens Co.:  
Carring Tool ..... 40¢40¢10%  
Chisel ..... 65¢65¢10%  
File and Axl. ..... 65¢65¢10%  
Saw and Plane ..... 50¢40¢10%  
Screw Driver ..... 40¢40¢10%  
Millers Falls Adj. and Ratchet Auger Handles ..... 15¢10%  
Nicholson Simplicity File Handle ..... 1/2 doz. \$0.35¢\$0.50

**Hangers—**

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

**Allith Mfg. Co.:  
Reliable, No. 1; Allith, No. 3; Al-**

lith Adjustable, No. 6; Reliable Parlor Door ..... 50%

**Chicago Spring Butt Co.:  
Friction ..... 25%  
Oscillating ..... 25%  
Big Twin ..... 25%****Chisholm & Moore Mfg. Co.:  
Baggage Car Door ..... 50%  
Elevator ..... 30%  
Railroad ..... 50%****Cronk & Carrier Mfg. Co.:  
Loose Axle ..... 60¢10%  
Roller Bearing ..... 70%****Griffin Mfg. Co.:  
Solid Axle, No. 10, \$12.00 ..... 70%  
Roller Bearing, No. 11, \$15.00, 70%  
Roller Bearing, Ex. Hy., No. 22, \$18.00 ..... 70%  
Hinged Hangers, \$18.00 ..... 60¢10%****Lane Bros. Co.:  
Parlor, Ball Bearing, \$4.00;  
Standard, \$3.15; No. 105, \$2.85;  
New Model, \$2.90; New Cham-**

pion ..... \$2.25

**Barn Door, Standard ..... 60¢5%  
Hinged ..... net \$8.10  
Covered ..... 60¢25%  
Special ..... 70¢45%****Lawrence Bros.:  
Advance and Sterling ..... 60¢10%  
Cleveland and Peerless ..... 75%  
Clippers, No. 75 ..... 60%  
Crown ..... 60¢10%  
Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25 ..... 60¢5%  
Giant ..... 70¢45%  
Hummer ..... 70¢45%  
New York ..... 60¢10%****McKinney Mfg. Co.:  
No. 1, Special, \$15 ..... 60¢10%  
No. 2, Standard, \$18 ..... 60¢10%  
Hinged Hangers, \$18 ..... 50%  
Meyers' Staying Hangers ..... 60¢5%****Richards Mfg. Co.:  
Hangers, Nos. 47, 48, 147, 217, 60¢45%  
Pioneer Wood Track, No. 3, \$2.25  
Roller B'r's St'l Track No. 12, \$2.20  
Roller B'r's St'l Track No. 13, \$2.50  
Roller B'r's, Nos. 39, 41, 43, \$2.45; No. 150 ..... 70¢7%  
Hero, Adj. Track No. 19, 50¢10%  
Adjustable Track Tandem Trolley Track No. 16 ..... 50¢10%  
Seal, Steel Track No. 8 ..... \$2.25  
Auto Adj. Track No. 22 ..... 50¢5%  
Trolley B. D. No. 17, \$1.25; F. D. No. 120, \$2.25; No. 121, \$2.45; No. 150 ..... \$2.50  
Safety Underwriters F. D. No. 101 ..... 50%  
Tandem No. 41, 2 1/2 and 3 60¢10%  
Palace, Adjustable Track No. 132 ..... 50¢5%  
Royal, Adjustable Track No. 122 ..... 50¢10%  
Ives' Wood Track No. 1 ..... \$2.25  
Trolley H. D. No. 20 ..... 50¢10%  
Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 28 ..... \$1.60  
Zig Zag Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2, 70¢7%  
Anti-friction, No. 42; No. 40, sizes 2 1/2 and 3 ..... 40%  
Hinged Tandem No. 48 ..... 60¢45%  
Folding Door B. B. Swivel No. 135 ..... 40%****Stowell Mfg. & Foundry Co.:  
Acme Parlor Ball Bearing ..... 30%  
Acme Hinge Door ..... 60%  
Apex Parlor Door ..... 50¢10%  
Atlas ..... 60%  
Baggage Car Door ..... 50%  
Climax Anti-Friction ..... 50%  
Elevator ..... 40%  
Express ..... 50%  
Lander Parlor Door ..... 50%  
Matchless ..... 50%  
Nansen ..... 70%  
Parlor Door, 50¢10%; Railroad, 50¢10%  
Steel, Nos. 300, 404, 500 ..... 50%  
Underwriters' Fire Door ..... 40%  
Wild West Warehouse Door, 50%  
Wilburn, No. 0 net, 1/2 doz. \$9.00  
Zenith for Wood Track ..... 50%****A. L. Sweet Iron Works:  
Check Back, 70%; Eagle ..... 70%  
Climax Anti-Friction ..... 50¢10%  
Hylo Hinge, New Perfection ..... 60%  
Pilot, Pilot Hinge ..... 60%  
Rider Wooster ..... 65%  
Western Pattern ..... 70%****Taylor & Boggis F'y Co.'s Kid-**

der's Roller Bearing, 50¢15¢10¢45%

**Hangers— Garment—**

Pullman Trouser, 1/2 gro., 1 pair Flat Aluminum, \$9.00; 1 pair Round Nickelled, \$9.00; 4 pair Round Nickelled, \$27.00; 1 pair Flat Gun Metal, \$12.00; 1 pair Flat Black Enamelled, \$7.50; 1 pair Wood Clamp, \$13.00; Skirt Hangers, Folding, per gro., \$21.00; Coat Hangers, Folding, per gro., \$2.00; Garment Hanger Rods, Round Nickelled, per gro., \$15.00; Garment Hanger Loops, Round Nickelled, per gro., \$15.00  
Victor Folding ..... 1/2 gro. \$9.00  
Western, W. G. Co. .... 75¢10%

**Gate—**

Myers' Patent Gate Hangers, 1/2 doz. net ..... \$4.50

**Joist and Timber—**

Lane Bros. Co. .... 30%

**Hasps—**Griffin's Security Hasp ..... 50%  
McKinney's Perfect Hasp, 1/2 doz. .... 50%**Hatchets—**

Regular list, first quality ..... 50%  
Second quality \$1.00 per doz. less than first quality.

**Heaters, Carriage—**

Clark No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 1D, \$2.75; No. 7D, \$3.00; No. 3E, \$3.25; No. 4, \$3.50 ..... 15%  
Clark Coal, 1/2 doz. \$0.75 ..... 10%

**Hinges—****Blind and Shutter Hinges—**

Surface Gravity Locking Blind: (Victor; National; 1888 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No. .... 1 1 1/2 3 5

Dox. pair ..... \$0.75 1.35 2.70

**Mortise Shutter:  
(L. & P., O. S., Dixie, &c.)  
No. .... 1 1 1/2 3 5  
Dox. pair ..... \$0.70 .65 .60 .55****Mortise Reversible Shutter (Buf-  
falo, &c.):  
No. .... 1 1 1/2 2  
Dox. pair ..... \$0.70 .65 .60**

North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50 ..... 70¢75%

Charles Parker Co. .... 70¢75%

Parker Wire Goods Co.:  
Hale & Benjamin Automatic Blind Hinges ..... 20%  
Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00 ..... 20%  
Reading's Gravity ..... 60%  
Stanley's Steel Gravity Blind Hinges, No. 1677, 1/2 doz. sets, without screws, \$0.35; with screws, \$1.25 ..... 75¢10%  
Wrightsville Hardware Co.:  
O. S., Lull & Porter ..... 75¢10¢5%  
Acme, Lull & Porter ..... 75¢10%  
Queen City Reversible ..... 75¢10%  
Shepard's Noiseless, Nos. 60, 65, 68 ..... 75¢10%  
Niagara Gravity Locking, Nos. 1, 3 & 5 ..... 75¢10¢5%  
1888, Old Pat'n, Nos. 1, 3 & 5 ..... 75¢10¢5%  
Tip Pat'n, Nos. 1, 3 & 5 ..... 10¢45%  
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75¢10%  
Shepard's Double Locking, Nos. 20 & 25 ..... 70%  
Champion Gravity Locking, No. 75, 75%  
Steamboat Gravity Locking, No. 10, 75%  
Pioneer, Nos. 961, 45 & 54 ..... 75%  
Empire, Nos. 101 & 105 ..... 70%  
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60%
**Gate Hinges—**

Clark's or Shepard's—Dox. sets:

No. .... 1 2 3

Hinges with Latches, 2.70 5.00

Hinges only ..... 1.40 2.05 3.80

Latches only ..... 70 70 75

**New England:  
With Latch ..... doz. ... \$2.00  
Without Latch ..... doz. ... \$1.60  
Reversible Self-Closing:  
With Latch ..... doz. ... \$1.75  
Without Latch ..... doz. ... \$1.35****Western:  
With Latch ..... doz. \$1.75  
Without Latch ..... doz. \$1.15**Wrightsville Hardware Co.:  
Shepard's or Clark's, doz. sets, Nos. 1, 2, 3

Hinges with Latches, \$2.00 2.70 5.00

Hinges only ..... 1.40 2.05 3.80

Latches only ..... 70 70 75

**Pivot Hinges—**

Bommer Bros. Pivot ..... 40%

Lawson Mfg. Co. Matchless ..... 45%

**Spring Hinges—**

Holdback, Cast Iron ..... \$6.50¢\$7.00

Non-Holdback, Cast Iron ..... \$6.25¢\$6.75

J. Bardaley:  
Bardaley's Non-Checking Mor-

tise Floor Hinges ..... 15%

Bardaley's Patent Checking ..... 15%

Bommer Bros.:  
Bommer Ball Bearing Floor, 40%  
Bommer Spring Hinges ..... 40%  
No. 999 Wrot. Steel Hold Back, 1/2 gr. \$9.00Chicago Spring Butt Co.:  
Chicago Spring Hinges ..... 25%  
Triple End Spring Hinges ..... 50%  
Chicago (Ball Bearing) Floor ..... 50%  
Garden City Engine House ..... 25%  
Keene's Saloon Door ..... 25%  
Columbian Hardware Co.:  
Acme Wrought Steel ..... 30%  
Acme Brass ..... 25%  
American ..... 30%  
Columbia, 1/2 gr., No. 14, \$9.00;  
No. 18, \$25.00  
Columbia, Adj., No. 7, 1/2 gr. \$12.00  
Gem, new list ..... 30%  
Clover Leaf ..... 1/2 gr. \$12.00  
Oxford, new list ..... 30%  
Floor Spring Hinges ..... 65¢10%  
Lawson Mfg. Co., Matchless ..... 30%  
Richards Mfg. Co.:  
Superior Double Acting Floor Hinges ..... 40%  
Shelby Spring Hinge Co.:  
Buckeye All Steel Holdback Screen Door ..... 1/2 gr. \$9.00  
Chief Ball Bearing Floor Hinge ..... 50%  
Ball Bearing Door ..... 25%  
No. 777, Sheet Steel Holdbk, 1/2 gr. \$9.00  
Superior Spring Hinge Co.:  
Superior Floor Hinges ..... 33%  
The Stover Mfg. Co.:  
Ideal, No. 16, Detachable, 1/2 gr. \$12.50  
Ideal, No. 4 ..... 1/2 gr. \$9.00  
New Idea No. 1 ..... 1/2 gr. \$9.00  
New Idea, Double Acting ..... 50%  
New Idea Floor ..... 50%
**Wrought Iron Hinges—**

Strap and T Hinges, &amp;c., List December 29, 1901:

Light Strap Hinges ..... 65%  
Heavy Strap Hinges ..... 75%  
Light T Hinges ..... 60%  
Heavy T Hinges ..... 65%  
Extra H's T Hinges ..... 70%  
Hinge Haps ..... 45%  
Cor. Heavy Strap ..... 75%  
Cor. Ez. Heavy T ..... 70%  
Screw Hook [ 6 to 12 in. lb. 94¢  
and Strap. [ 14 to 20 in. lb. 14¢  
[ 22 to 36 in. lb. 94¢

Extra 50% to 100% often given on most of these Hinges.

**Screw Hook and Eye:**

1/4 to 1 inch.....lb. 6¢  
 1/2-inch.....lb. 7¢  
 1-inch.....lb. 8¢

**Hitchers, Stall—**

Covert Mfg. Co., Stall Hitchers.....30¢&2¢

**Hods—Coal—**

Inch.....15 16 17 18  
 Galv. Open.....\$2.50 2.75 3.00 3.25  
 Jap. Open.....\$1.90 2.10 2.25 2.55  
 Galv. Funnel.....\$3.00 3.30 3.60 3.90  
 Jap. Funnel.....\$2.45 2.65 2.85 3.30

**Masons' Etc.—**

Cleveland Wire Spring Co.:  
 Steel Brick, No. 16.....each \$0.95  
 Steel Mortar, No. 158.....each \$1.25

**Hoes—Eye—**

Scovill and Oval Pattern.....  
 65¢&10¢&60¢&10¢&10¢  
 Grub, list Feb. 25, 1899.....  
 70¢&10¢&75¢&10¢

**D. & H. Scovill.....30¢****Handled—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Croix's Weeding No. 1, \$2.00; No. 2, \$2.25  
 Ft. Madison Cotton Hoe.....70¢&10¢&10¢  
 Ft. Madison Crescent Cultivator Hoe.....  
 70¢&10¢&10¢

Ft. Madison Mattock Hoes.....  
 Regular Weight.....\$ doz. 66¢  
 Junior Size.....\$ doz. \$4.00  
 Ft. Madison Sprouting Hoe.....\$ doz. 50¢  
 Ft. Madison Dixie Tobacco Hoe.....  
 75¢&10¢&75¢

Kretzinger's Cut Easy.....70¢&10¢  
 Warren Hoe.....45¢&10¢  
 W. & C. Ivanhoe.....\$3.10  
 B. B. 6 in. Cultivator Hoe.....\$3.10  
 B. B. 6 1/2 in. ....\$3.35  
 Acme Weeding.....\$ doz. net, \$4.35  
 W. & C. L'ning Shuffie Hoe.....\$ doz. \$4.85

**Hoisting Apparatus—**  
 See Machines, Hoisting.

**Holders—Bit—**  
 Angular, \$ doz. \$24.00.....45¢&10¢

**Door—**  
 Bardsley's.....45¢  
 Empire.....50¢  
 Pullman.....50¢  
 Superior.....35¢

**File and Tool—**  
 Nicholson File Holders and File  
 Handles.....35¢&40¢

**Fruit Jar—**  
 Triumph Fruit Jar Holder, \$ gross,  
 \$10.80; \$ doz. ....\$1.25

**Trace and Re-in—**  
 Fernald Toubie Trace Holder, \$ doz.  
 pairs .....\$1.25  
 Dash Dash Rein Holder, \$ doz.  
 pairs .....\$1.25

**Hones—Razor—**  
 Pike Mfg. Co., Belgian, German and  
 Swaty.....50¢

**Hooks—Cast Iron—**  
 Bird Cage, Reading.....40¢  
 Clothes Line, Reading List.....40¢  
 Clothes Line, Stowell's.....70¢  
 Coat and Hat, Reading.....45¢&20¢  
 Coat and Hat, Stowell's.....70¢  
 Coat and Hat, Wrightsville.....40¢  
 Harness, Reading List.....40¢  
 Harness, Stowell's.....50¢  
 School House, Stowell's.....70¢

**Wire—**  
 Belt C. & H. Hooks.....80¢&10¢  
 75¢&10¢&75¢&10¢&10¢  
 Columbian Hdw Co., Gem.....70¢&10¢  
 Parker Wire Goods Co., King.....70¢&10¢  
 Western W. G. Co. Molding.....75¢  
 Wire Goods Co.:  
 Acme, 60¢&10¢; Chief, 70¢; Crown,  
 75¢; Czar, 65¢; V. Brace, 75¢;  
 Czar Harness, 50¢&10¢.

**Wrought Iron—**  
 Box, 6 in., per doz., \$1.00; 8 in.,  
 \$1.25; 10 in., \$2.50.  
 Cotton.....\$ doz. \$1.05@1.25  
 Wrought Staples, Hooks, &c.—  
 See Wrought Goods

**Miscellaneous—**  
 Hooks, Bench, see Staps, Bench.  
 Bush, Light, doz. \$4.75; Medium,  
 \$5.35; Heavy, \$6.25  
 Grass, best, all sizes, per doz. \$1.60  
 Grass, common grades, all sizes,  
 per doz. ....\$1.30  
 Whiffetree.....lb. 5¢@6¢  
**Hooks and Eyes:**  
 Brass.....60¢&5¢@60¢&10¢&5¢  
 Malleable Iron.....70¢&10¢&10¢  
 Covert Mfg. Co. Gate and Scuttle  
 Hooks.....40¢  
 Ft. Madison Cut-Easy Corn Hooks,  
 \$ doz. \$3.25 net  
 Bench Hooks—See Bench Staps.  
 Corn Hooks—See Knives, Corn.

**Horse Nails—**  
 See Nails, Horse.

**Horseshoes—**  
 See Shoes, Horse.

**Hose, Rubber—**  
 Garden Hose, 1/2-inch:  
 Competition.....ft. 5 @ 6¢  
 3-ply Guaranteed, ft. 8 @ 9¢  
 4-ply Guaranteed, ft. 10 @ 11¢  
 Cotton Garden, 1/2-inch, coupled:  
 Low Grade.....ft. 8 @ 9¢  
 Fair Quality.....ft. 10 @ 11¢

**Irons—Sad—**  
 From 1 to 10.....lb. 3 @ 3¢  
 R. B. Rad Irons.....lb. 3¢@4¢  
 Mrs. Potter's, cents per set:  
 Nos. 50 55 60 65  
 Jap'd Tops.....65 62 75 78

Tin'd Tops.....70 67 80 77  
 New England Pressing, lb. 3¢@4¢  
**Pinking—**  
 Pinking Irons.....doz. 60¢

**Irons, Soldering**  
 See Copiers.

**Jacks, Wagon—**  
 Covert Mfg. Co.:  
 Auto Screw.....30¢&2¢; Steel, 45¢  
 Lockport.....50¢  
 Lane's Steel.....30¢&10¢&2¢  
 Richards' Tiger Steel, No. 130.....50¢&10¢  
 Smith & Hemenway Co.'s.....25¢

**Kettles—**  
 Brass, Spun, Plain.....20¢&25¢  
 Enamelled and Cast Iron—See Ware,  
 Hollow.

**Knives—**  
 Butcher, Kitchen, &c.—  
 Foster Bros.' Butcher, &c.....30¢  
 Wilkinson Shear & Cutlery Co.....60¢

**Corn—**  
 Wilkinson Wilcut Brand Knives and  
 Hooks.....60¢  
 Withington Acme, \$ doz. \$2.65;  
 Dent, \$2.75; Adj. Serrated, \$2.80;  
 Serrated, \$2.10; Yankee No. 1, \$1.50;  
 Yankee No. 2, \$1.15.

**Drawing—**  
 Standard List.....75¢&5¢&75¢&10¢  
 C. E. Jennings & Co., Nos. 45, 46, 60  
 Jennings & Griffin, Nos. 41, 42.....60¢  
 Swan's.....75¢  
 Watrous.....10¢  
 L. & I. J. White.....20¢&5¢&25¢

**Hay and Straw—**  
 Serrated Edge, per doz. \$5.75@6.00  
 Iwan's Sickle Edge.....\$ doz. \$9.50  
 Iwan's Serrated.....\$ doz. \$10.00

**Mining—**  
 Buffalo.....\$ gro. \$13.00

**Miscellaneous—**  
 Farriers'.....\$ doz. \$3.00@3.25  
 Westenhelm's.....\$ doz. \$3.00@3.25

**Knobs—**  
 Base, 2 1/2-inch, Birch, or Maple,  
 Rubber Tip.....gro. \$1.25@1.40  
 Carriage, Jap., all sizes.....  
 gro. \$4.45@4.5¢

**Door, Mineral.....doz. 65¢&70¢**

**Door, Por. Jap'd.....doz. 70¢&75¢**

**Door, Por. Nickel.....doz. \$2.05@2.15**

**Bardsley's Wood Door, Shutters, &c. 15¢**

**Lacing, Leather—**  
 See Belting, Leather.

**Ladders, Store, &c.—**  
 Allith Mfg. Co., Reliable.....50¢  
 Lane's Store.....25¢  
 Myers' Noiseless Store Ladders.....50¢  
 Richards Mfg. Co.:  
 Improved Noiseless, No. 112.....80¢  
 Climax Shelf, No. 113.....50¢  
 Trolley, No. 109.....50¢

**Ladies, Melting—**  
 L. & G. Mfg. Co. (low list).....25¢  
 P. S. & W.....50¢  
 Reading.....60¢

**Lanterns—Tubular—**  
 Regular Tubular, No. 0.....  
 doz. \$4.25@4.50  
 Lift Tubular, No. 0.....  
 doz. \$4.75@5.00  
 Hinge Tubular, No. 0.....  
 doz. \$4.75@5.00  
 Other Styles.....\$4@4.5¢

**Bull's Eye Police—**  
 No. 1, 2 1/2-inch.....\$2.75@3.00  
 No. 2, 3-inch.....\$3.00@3.25

**Leads and Stands, Shoe—**  
 Stowell's Atlas, Malleable Iron.....50¢  
 Stowell's Badger, Cast Iron.....50¢

**Latches—Thumb—**  
 Roggin's Latches, with screw.....  
 doz. 35¢@40¢

**Door—**  
 Allith Mfg. Co., Automatic, No. 400,  
 \$ doz. ....\$4.00  
 Crouk & Carrier Mfg. Co., No. 101,  
 \$ doz. ....\$2.30  
 Cronk & Carrier Mfg. Co., Latch,  
 Hap and Staps.....50¢  
 Richards' Bull Dog, Heavy, No. 125,  
 50¢&5¢  
 Richards' Trump, No. 127.....\$1.50  
 Stowell's Steel.....50¢

**Leaders, Cattle—**  
 Small.....\$ doz. 60¢; large, 60¢  
 Covert Mfg. Co.:  
 Cotton, Hemp and Jute, 45¢;  
 Sisal, 35¢.

**Lifters, Transom—**  
 R. & E.....35¢&40¢

**Lines—**  
 Wire Clothes, Nos. 18 19 20  
 100 feet.....\$2.25 2.00 1.75  
 75 feet.....\$1.75 1.35 1.10  
 Anniston Waterproof Clothes, 50 ft.,  
 \$ gro. \$25.00; Gilt Edge, \$25.00; Air  
 Line, \$25.00; Acme, \$18.00; Alabama,  
 \$17.00; Empire, \$16.00; Advance,  
 \$14.00; Eclipse, \$13.50; Chicago,  
 \$11.50; Standard, \$10.50; Columbia,  
 \$9.50; Allston, \$13.50; Calhoun, \$12.00.  
 Samson Cordage Works:  
 Solid Braided Chalk, Nos. 0 to 3, 40¢;  
 Silver Lake Braided Chalk, No. 0,  
 \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,  
 \$7.50; No. 4, \$8.00; No. 5, \$8.50;  
 Masons' Lines, Shade Cord, &c.:  
 White Cotton, No. 3/4, \$1.50; No. 4,  
 \$2.00; No. 4 1/2, \$2.50; Colors, No. 3/4,  
 \$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;  
 Linen, No. 3/4, \$2.50; No. 4, \$3.50;  
 No. 4 1/2, \$4.50; No. 5, \$5.00;  
 Tent and Awning Lines: No. 5,  
 White Cotton, \$7.50; Drab Cotton,  
 \$2.50  
 Clothes Lines, White Cotton: 50 ft.,  
 \$2.75; 60 ft., \$3.25; 70 ft., \$3.75;  
 80 ft., \$4.25; 90 ft., \$4.75;  
 100 ft., \$5.25.....20¢

**Locks—Cabinet—**

Cabinet Locks.....33 1/2 @ 33 1/2 @ 7 1/2 1/2  
**Door Locks, Latches, &c.—**  
 NOTE.—Net Prices are very often made  
 on these goods.

Reading Hardware Co.....40¢  
 R. & E. Mfg. Co.....40¢

**Elevator—**  
 Stowell's.....50¢

**Padlocks—**  
 Wrought Iron.....75¢&10¢&5¢@80¢&5¢  
 Net prices are general.

R. & E. Mfg. Co. Wrought Steel and  
 Brass.....75¢&10¢

**Sash, &c.—**  
 Ives' Patent:  
 Bronze and Brass, 60%; Crescent,  
 40¢&20¢; Iron, 60%; Window Ven-  
 tilating, 55%; Robinson Pat. Ven-  
 tilating Sash, Lock, 33 1/2%; Wrought  
 Bronze and Brass, 55%; Wrought  
 Steel, 55%.

Pullman Patent Ventilating Lock, 25%  
 Reading.....40¢

**Machines—Boring—**  
 Com. Up't, without Augers,  
 \$2.00@2.25  
 Com. Ang'l'r, without Augers,  
 \$2.25@2.50

Swan's Improved.....40¢&10¢  
 Jennings, Nos. 1 and 4.....35¢&5¢  
 Miller's Falls.....5.75  
 Snell's, Rice's Pat. 2.50.....2.75

**Corking—**  
 Reisinger Invinible Hand Power.....  
 \$ doz. \$48.00

**Fence—**  
 Williams' Fence Machines.....each, \$5.50

**Hoisting—**  
 Moore's Anti-Friction Differential  
 Pulley Block.....30¢  
 Moore's Hand Hoist, with Lock  
 Brake.....20¢

**Ice Cutting—**  
 Chandler's.....12 1/2%

**Washing—**  
 Boss Washing Machine Co.: Per doz.  
 Boss No. 1.....\$37.00  
 Boss Rotary.....\$34.00  
 Champion Rotary Banner No. 1.....\$54.00  
 Standard Champion No. 1.....\$48.00  
 Standard Perfection.....\$26.00  
 Cinti Square Western.....\$30.00  
 Uneda American, Round.....\$30.00

**Mallets—**  
 Hickory.....45¢&5¢@50¢  
 Lignumvite.....45¢&5¢@50¢  
 Tinnors' Hickory and Apple-  
 wood.....doz. 45¢&5¢@50¢

**Mangers, Stable—**  
 Sweet Iron Works.....50¢

**Mashers, Vegetable—**  
 Western, W. G. Co., Potato.....60¢&10¢

**Mats, Door—**  
 Elastic Steel (W. G. Co.), new list.....50¢  
 Keystone Wire Matting Co.:  
 Keystone.....50¢  
 Ideal.....50¢

**Mattocks—**  
 See Picks and Mattocks.

**Milk Cans—See Cans, Milk.**

**Mills, Coffee, &c.—**  
 Enterprise Mfg. Co.....20¢&25¢  
 National list Jan. 1, 1902.....30¢  
 Parker's Columbia & Victoria.....50¢&10¢&60¢  
 Parker's Box and Side.....50¢&10¢&60¢  
 Swift, Lane Bros. Co.....30¢

**Motors Water—**  
 Divine's Red Devil.....30¢

**Mowers, Lawn—**  
 NOTE.—Net prices are generally quoted  
 Cheapest.....all sizes, \$1.85@2.00  
 Cheap.....all sizes, \$2.00@2.50  
 Better Grade.....all sizes, \$2.50@4.50  
 12 14 16 18-in.  
 High Grade.....\$4.50 4.75 5.00 5.25  
 Continental.....60¢&5¢  
 Great American.....70¢  
 Quaker City.....70¢  
 Pennsylvania, Jr. Ball Bearing.....60¢&5¢  
 Pennsylvania Golf.....50¢  
 Pennsylvania Horse.....35¢&45¢  
 Pennsylvania Pony.....40¢&5¢  
 Granite State:  
 Style A, Low Wheel.....70¢&10¢&10¢&5¢  
 Style B, Low Wheel.....70¢&10¢&5¢  
 Style C, High Wheel.....70¢&10¢  
 Style D, High Wheel.....70¢  
 Philadelphia:  
 Styles M. S. C. K. T.....70¢&5¢  
 Style A, all Steel.....60¢&5¢  
 Style E, High Wheel.....70¢&10¢&5¢  
 Drexel and Gold Coin, special list.....50¢

**Nails—**  
 Wire Nails and Brads, Miscel-  
 laneous.....85¢&10¢@85¢&10¢&5¢  
 Cut and Wire. See Trade Report.  
 Hungarian, Finishing, Upholster-  
 ers' &c. See Tacks.

**Horse—**  
 Nos. 7 8 9 10  
 Anchor.....23 20 19 18.....40¢&5¢  
 Champlain.....28 26 25 24.....50¢  
 Coleman.....13 12 11 11.....net  
 New Haven.....23 21 20 19 18.....40¢&5¢  
 Western.....\$ lb 8 1/2¢  
 Jobbers' Special Brands.....  
 per lb. 9¢@10¢

**Picture—**  
 1/2 2 3 4 5 6 7 8 9 10  
 Brass H'd, \$5 55 60 70 .. gro  
 Por. Head.....1.10 1.10 1.10 .. gro

**Nippers—**  
 See Pliers and Nippers.

**Nuts—**  
 Cold Punched: Off list.  
 Square, Blank or Tapped.....  
 4.80@4.90¢  
 Hexagon, Blank or Tapped.....  
 5.20@5.30¢

Square, Blank, C. & T. 5.17@5.20¢  
 Hexagon, Blank, C. & T. 5.80@5.90¢

**Hot Pressed:**  
 Square, Blank.....5.00@5.10¢  
 Hexagon, Blank.....5.40@5.50¢  
 Square, Tapped.....4.90@5.00¢  
 Hexagon, Tapped.....5.30@5.40¢

**Oakum—**  
 Rest.....lb. 6 1/2¢  
 U. S. Navy.....lb. 6¢  
 Navy.....lb. 5¢  
 Plumbers' Spun Oakum.....3 1/2¢  
 In carload lots 1/4 lb. off, f.o.b.  
 New York.

**Oil Tanks—See Tanks, Oil.**

**Oilers—**  
 Brass and Copper.....50¢&10¢  
 Tin or Steel.....65¢&10¢&70¢  
 Zinc.....65¢&10¢&70¢  
 Chase or Paragon:  
 Brass and Copper.....50¢&10¢  
 Tin or Steel.....65¢&10¢  
 Zinc.....65¢&10¢  
 Malleable, Hammers' Imp'd, Nos.  
 1, 2, 3, 50%  
 American Tube & Stamping Co.:  
 Spring Bottom Cans.....70¢&75¢&10¢  
 Railroad Oilers, &c.....60¢&65¢&10¢

**Openers—Can—Per doz.**

Sprague, Iron Handle.....30¢&35¢  
 Sprague, Wood Handle.....35¢&40¢  
 Sardine Scissors.....\$1.75@3.00  
 National.....50¢&10¢  
 Vim Tin Shear and Can Opener,  
 \$ doz. 75¢; per gro., \$7.50

**Egg—**  
 Nickel Plate, \$ doz., \$2.00; Silver  
 Plate, \$4.00.

**Packing—**  
 Asbestos Packing, Wick and  
 Rope.....17¢@22¢

**Rubber—**  
 (Fair quality goods.)  
 Sheet, C. I.....11¢@12¢  
 Sheet, C. B. S.....11¢@12¢  
 Sheet, C. B. S.....12¢@13¢  
 Sheet, Pure Gum.....40¢@45¢  
 Sheet, Red.....40¢@50¢  
 Jenkins' 96, 11 lb 80¢.....25¢&5¢

**Miscellaneous—**  
 American Packing.....lb. 7¢@10¢  
 Cotton Packing.....lb. 16¢@25¢  
 Italian Packing.....lb. 9¢@12¢  
 Jute.....lb. 4¢@4 1/2¢  
 Russia Packing.....lb. 8¢@11¢

**Pails, Creamery—**  
 R. M. Co., with gauges, \$ doz.,  
 No. 1, \$6.25; No. 2, \$6.50.

**Pails, Water, Well, &c.—**  
 See Buckets.

**Pans—Dripping—**  
 Standard List.....65¢&10¢

**Fry—**  
 Common Lipped:  
 Nos. 1 2 3 4 5  
 Per doz. \$0.75 0.80 0.90 1.10 1.30

**Refrigerator, Galva.—**  
 Inch.....12 14 16 18  
 Per doz. \$1.75 2.25 2.80 3.15

**Roasting and Baking—**  
 Regal, R. M. Co., \$ doz., Nos. 5,  
 \$1.50; 10, \$3.25; 20, \$3.75; 30, \$6.25.  
 Savory, \$ doz., net, No. 200, \$9.00;  
 400, \$15.00.  
 Simplex, \$ gro.:  
 No. 40 50 60 100 150 200  
 \$30.00 35.00 42.00 51.00 59.00 68.00

**Paper—Building Paper**  
 Asbestos.....lb.  
 Roll Board or Building Felt,  
 5 to 30 lb., per 100 sq. ft. 3¢@5¢  
 Roll Board or Building Felt,  
 3-32 and 1/4 in., 45 to 60 lb.,  
 per 100 sq. ft. ....6¢  
 Mill Board, Sheet, 40 x 40 in.,  
 1-32 to 1/4 in. ....3¢@5¢

**Rosin Sized Sheathing: 500 sq. ft.**  
 Light weight, 25 lbs. to roll.....  
 40¢@50¢  
 Medium weight, 30 lbs. to r. l.....  
 50¢@55¢  
 Heavy weight, 40 lbs. to roll.....  
 65¢@70¢

**Black Water Proof Sheathing,**  
 500 sq. ft., 1 ply, 65¢; 2 ply,  
 85¢; 3 ply, \$1.10; 4 ply, \$1.25.  
 Defeating Felt, 9, 6 and 4 1/2 sq.  
 ft. to lb. ton.....\$50.00  
 Red Rope Roofing, 250 sq. ft.  
 per roll.....\$1.75

**Tarred Paper—**  
 1 ply (roll 400 sq. ft.), ton.....  
 \$31.00@35.00  
 2 ply, roll 198 sq. ft. ....57¢  
 3 ply, roll 108 sq. ft. ....80¢  
 Slater's Felt (roll 500 sq. ft.).....76¢

**Sand and Emery—**  
 Flint Paper and Cloth.....50¢&10¢  
 Garnet Paper and Cloth.....25¢  
 Emery Paper and Cloth.....50¢&10¢&60¢

**Parers—Apple—**  
 Advance.....\$ doz. \$4.00  
 Baldwin.....\$ doz. \$4.00  
 Bonanza Improved.....each \$4.50  
 Dandy.....\$ doz. \$4.00  
 Europa.....each \$7.50  
 Europa Improved.....each \$20.00  
 Family Ray State.....\$ doz. \$15.00  
 Improved Ray State.....\$ doz. \$15.00  
 Little Star.....\$ doz. \$5.00  
 New Lightning.....\$ doz. \$7.00  
 Reading 72.....\$ doz. \$3.25





**Rules**

Boxwood	.....60@60&10%
Ivory	.....55&10@55&10&5%
Chapin-Stephens Co.	
Boxwood	.....00%
Flexfold	.....27%&10&10%
Ivory	.....35&10@35&10&10%
Miscellaneous	.....50&50&10&10%
Stephens' Combination	.....55&55&10%
Stationers	.....10&10&10%
Kaufel & Easer Co.	
Folding, Wood	.....35&10%
Folding, Steel	.....33%&10%
Lufkin's Steel	.....50&10%
Lufkin's Lumber	.....60%
Stanley It. & L. Co.	
Boxwood	.....60%
Ivory	.....45%
Miscellaneous	.....60%
Zig Zag	.....40%
Zig Zag, Pin Joint	.....42%&10%
Upon Nut Co.	.....60&60&10%
Hoxwood	.....35&10@35&10&10%
Ivory	.....35&10@35&10&10%

**Sash Balances—**

See Balance, Sash.

**Sash Locks—**

See Locks, Sash.

**Sash Weights—**

See Weights, Sash.

**Sausage Stuffers or Fillers**

See Stuffers or Fillers, Sausage.

**Saw Frames—**

See Frames, Saw.

**Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

One-Man Saw, 40"; Wood Saws, 40"; Hand, Compass, etc., 40"	
Chapin-Stephens Co.	30@30&10%
Turning Saws and Frames, 30@30&10%	
Diamond Saw & Stamping Works	30&10&10%
Sterling Kitchen Saws, 30@10&10%	
Diston's:	
Circular, Solid and Ins'ted Tooth, 50"	50%
Band, 2 to 14 in. wide, 60"	60%
Band, 1/4 to 1 1/2 in. wide, 45"	45%
Crosscuts, 50"	50%
Narrow Crosscuts, 50"	50%
Mulay, Mill and Drag, 50"	50%
Framed Woodsaws, 25"	25%
Woodsaw Blades, 25"	25%
Woodsaw Tools, 25"	25%
Hand Saws, Nos. 12, 9, 16, 40, 120, 126, 17, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000	
Hand, 80, Combination, 30"	30%
Compass, Key Hole, &c., 25"	25%
Butcher Saws and Blades, 30"	30%

**C. E. Jennings & Co.'s**

Back Saws	.....25%
Butcher Saws	.....30%
Compass and Key Hole Saws	.....35%
Framed Wood Saws	.....35%
Hand Saws	.....25%
Wood Saw Blades	.....35%
Butcher Saws	.....15&10%
Star Saw Blades	.....15&10%
Massachusetts Saw Works	
Victor Kitchen Saws	.....40&10&50%
Butcher Saws Blades	.....30&40%
Peace & Richardson's Hand Saws	.....30%
Simonds	
Circular Saws	.....50%
Crescent Ground Cross Cut Saws	.....35%
One-Man Cross Cuts	.....40&10%
Gang Mill, Mulay and Drag Saws	.....50%
Hand Saws	.....25%
Back Saws	.....25%
Butcher Saws	.....30%
Hand Saws	.....25%
Hand Saws, Bay State Brand	.....40%
Compass, Key Hole, etc.	.....25&10%
Wood Saws	.....40&10%
Wheeler, Madden & Clemens Mfg. Co.'s Cross Cut Saws	.....50%

**Hack Saw Blades and Frames—**

Frames—	
Atkins' Hack Saw Blades A A A	.....25%
Diston's	
Concave Blades.....	25%
Keystone Blades.....	30%
Hack Saw Frames.....	30%
Fitchburg File Works, The Best.....	30%
C. E. Jennings & Co.	
Hack Saw Frames, Nos. 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000	40 1/4 %
Hack Saw, Nos. 175, 180, complete,	40 1/4 %
Goodell's Hack Saw Blades.....	40%
Griffin's Hack Saw Frames.....	35 5/8 %
Griffin's Hack Saw Blades.....	35 5/8 %
Star Hack Saw and Blades.....	34 1/2 %
Starling Hack Saw Blades.....	34 1/2 %
Starling Hack Saw Frames.....	30 1/4 %
Eterling Power Hack Saw Machines	
each, No. 1, \$25.00; No. 2, \$30.00.....	10%
Victor Hack Saw Blades.....	25%
Victor Hack Saw Frames.....	40%

**Goodell's Hack Saw Blades**

Goodell's Hack Saw Blades	.....35&10%
Griffin's Hack Saw Blades	.....35&10%
Star Hack Saws and Blades	.....15&10%
Sterling Hack Saw Blades	.....30&10&5%
Sterling Hack Saw Frames	.....30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00; No. 3, \$35.00	
Victor Hack Saw Blades	.....25%
Victor Hack Saw Frames	.....40%

**Scroll—**

Barnes, No. 7, \$15	.....25%
Barnes' Scroll Saw Blades	.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18; with boring attachment, \$20	
Lester, complete, \$10.00	.....15&10%
Rogers, complete, \$4.00	.....15&10%

**Scales—**

Family, Turnbull's	.....50@50&10%
Counter	
Hatch, Platform, 1/4 oz. to 1 lb.	.....dos. \$5.50
Two Platforms, 1/4 oz. to 8 lb.	.....dos. \$16.00
Union Platform, Plain \$1.70@1.90	
Union Platform, Stpd. \$1.85@2.15	
Chatillon's	
Eureka	.....25%
Favorite	.....40%
Crocker's Trip Scales	.....50%
Chicago Scale Co.	
The Little Detective	.....25 lbs No. 2
Portable Platform (reduced list)	.....50%
Wagon or Stock (reduced list)	.....25&10%
The Standard Portables	.....45%
The Standard R. R. and Warehouse	.....50&10%

**Scrapers—**

Box, 1 Handle	.....dos. \$2.00@2.25
Box, 2 Handle	.....dos. \$3.50@2.60
Ship	.....Light, \$2.00; Heavy, \$1.50
Adjustable Box Scraper (S. R. & L. Co.)	.....\$6.00
Chapin-Stephens Co., Box	.....30@30&10&10%

**Screens, Window and Frames—**

Maine Screen Frames	.....40&10&5%
See also Doors	

**Screws—Bench and Hand**

Bench, Iron, doz., 1 in.	.....\$2.50@2.75
Bench, Wood	.....\$5@25&5%
Hand, Wood	.....25@25&5%
Bus Mfg. Co. Hand	.....30@30&10%
Chapin-Stephens Co. Hand	.....25%

**Coach, Lag and Hand Rail—**

Lag, Cone Point, list Oct. 1	.....75&15%
Coach, Gimlet Point, list Oct. 1	.....75&10%
Hand Rail, list Jan. 1, '81	.....70&10@75%

**Jack Screws—**

Standard List	.....75%
Millers Falls	.....50&10&10%
Millers Falls, Roller	.....50&10%
P. S. & W.	.....50%
Swett Iron Works	.....75&80%

**Machine—**

List Jan. 1, '98	
Flat or Round Head, Iron	.....50@50&10%
Flat or Round Head, Brass	.....50@50&10%

**Set and Cap—**

Set (Iron)	.....80&7%&2%
Set (Steel), net advance over Iron	.....25%
Sq. Hd. Cap	.....75&10&7%&9%
Hex. Hd. Cap	.....75&10&7%&9%
Rd. Hd. Cap	.....60&10%
Fillister Hd. Cap	.....60&10&10%

**Wood—**

List July 23, 1903	
Flat Head, Iron	.....87%&10@%
Round Head, Iron	.....85 @10@%
Flat Head, Brass	.....82%&10@%
Round Head, Brass	.....80 @10@%
Flat Head, Bronze	.....77%&10@%
Round Head, Bronze	.....75 @10@%
Drive Screws	.....87%&10@%

**Scroll Saws—**

See Saws, Scroll.

**Scythes—**

Grass, No. 1, Plain	.....\$6.25@6.75
Clipper, Bronzed Webb	.....\$6.50@7.00
No. 3 Clipper, Pol'd Webb	.....\$6.75@7.25
No. 6 Clipper and Solid Steel	.....\$7.00@7.50
Bush, Weed and Bramble, No. 2	.....\$6.50@7.00
Grain, No. 1	.....\$8.25@8.75
Bronzed Webb, No. 1	.....\$8.50@9.00
Nos. 3 and 4 Clipper, Grain	.....\$8.75@9.25
Solid Steel, No. 6	.....\$9.25@9.75

**Seeders, Raisin—**

Enterprise

**Sets—Awl and Tool—**

Fray's Adj. Tool Handles, Nos. 1, \$12; 2, \$15; 3, \$18; 4, \$20; 5, \$22	
C. E. Jennings & Co.'s Model Tool Holders	.....50%
Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18; No. 15, \$10%	

**Garden Tool Sets—**

Ft. Madison Three Plows, Hoe, Rake and Shovel	.....\$1 doz sets \$9.00
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**Sets, Nail—**

Octagon	.....gro. \$3.50@3.75
Buck Bros.	.....25%
Cannon's Diamond Point	.....\$12.40%
Mayhew's	.....\$12.40%
Shells' Corrugated Cup Pt.	.....\$12.40%
Shells' Knurled Cup Pt.	.....\$12.40%
Victor Knurled Cup Pt.	.....\$12.40%

**Rivet—**

Regular list

Saw

**Atkins'—**

Criterion	.....40%
Adjustable	.....40%
Bemis & Call Co.'s	
Cross Cut	.....30%
Plate's Star, Monarch and Triumph	.....30%
Diston's Star, Monarch and Triumph	.....30%
Morrill's No. 1, \$15.00	.....50%
No. 3 and 4, Cross Cut, \$20.00	.....50%
No. 5, Mill, \$30.00	.....50%
No. 10, 11, 12, \$15.00	.....50%
Special, \$16.25	.....50%
Giant Royal Cross Cut	.....\$1 doz. \$3.00
Royal, Hand	.....\$1 doz. \$4.50
Taintor Positive	.....\$1 doz. \$6.75

**Shaving**

Fox Shaving Sets, No. 30

Smith &amp; Hemenway Co.'s

**Sharpeners, Knife—**

Chicago Wheel & Mfg. Co.	.....70%
Pike Mfg. Co.	
Fast Cut Pocket Knife Hones	.....\$1.50
Mounted Kitchen Sand Stone	.....\$1.50
Natural Grit Carving Knife	.....\$1.50
Hones, \$1 doz.	.....\$3.00
Quick Cut Emery Carving Knife Hones	.....\$1.50
Quick Edge Pocket Knife Hones	.....\$2.50

**Skate—**

Smith &amp; Hemenway Co., Eureka

**Shaves, Spoke—**

Iron	.....dos. \$1.10@1.25
Wood	.....dos. \$1.75@2.25

Bailey's (Stanley R. & L. Co.)	.....45%
Razor Edge (Stanley R. & L. Co.)	.....55%
Iron, 50"; Wood	.....55%
Chapin-Stephens Co.	.....30@30&10&10%
Goodell's	.....\$1 doz. \$9.00
Wood's F1 and F2	.....15&10%

**Shears—**

Cast Iron	7	8	9 in.
Best	.....\$16.00	18.00	20.00 gro.
Good	.....\$13.00	15.00	17.00 gro.
Cheap	.....\$5.00	6.00	7.00 gro.

**Straight Trimmers, etc.—**

Best quality Jap.	.....70@70&10%
Best quality, Nickel	.....60@60&10%
Fair quality, Jap.	.....80@80&65%
Fair quality, Nickel	.....75@75&10%
Tailors' Shears	.....40@40&10%
Acme Cast Shears	.....40@40&10%
Heinrich's Tailors' Shears	.....10%
Wilkinson's Sheep, 1900 list	.....30&10&5%
Grass, 50&10"; Horse or Mule, 50&10"	

**Tinners' Snips—**

Steel Blades	.....20&5@20&10%
Steel Laid Blades	.....40&10@50%
Forged Handles, Steel Blades, Berlin	.....50@50&5%
Heinrich's Snips	.....40%



Scythe Stones—	
Chicago Wheel & Mfg. Co.	
Gem Corundum, 10 in., \$2.00	
gro., 12 in., \$10.00	
Norton Emery Scythe Stones:	
Less than gross lots, \$9.00	
One gross or more, \$7.50	
Lots of 10 gross or more, \$6.00	
Pike Mfg. Co., 1901 list:	
Black Diamond S. S., \$12.00	
Lamotte S. S., \$11.00	
White Mountain S. S., \$9.00	
Green Mountain S. S., \$8.50	
Extra Indian Pond S. S., \$7.50	
No. 1 Indian Pond S. S., \$7.00	
No. 2 Indian Pond S. S., \$6.50	
Leader Red End S. S., \$4.50	
Quick Cut Emery, \$10.00	
Pure Corundum, \$18.00	
Crescent, \$7.00	
Emery Scythe Rifles, 2 Coat, \$8	
Emery Scythe Rifles, 3 Coat, \$10	
Emery Scythe Rifles, 4 Coat, \$12	
Balance of 1904 list 3 1/2%	
Stoppers, Bottle—	
Victor Bottle Stoppers, \$9.00	
Stops—Bench—	
Millers Falls, \$14.10	
Morrill's, \$14.50	
Morrill's, No. 2, \$12.50	
Door—	
Chapin-Stephens Co., \$10.00	
Plane—	
Chapin-Stephens Co., \$10.00	
Straps—Box—	
Carr's Universal, case lots, \$2.50	
Stretchers, Carpet—	
Cast Iron, Steel Points, \$6.00	
Socket, \$11.50	
Bullard, \$11.50	
Excelsior Stretcher and Tack Hammer Combined, \$11.50	
Strops, Razor—	
Star Diagonal Strop, \$25.00	
Stuffers, Sausage—	
Enterprise Mfg. Co., \$2.50	
National Specialty Co., list Jan. 1, 1902, \$3.45	
Sweepers, Carpet—	
National Sweeper Co., \$12.00	
Louis XV, Roller Bearing, Gold Plated, \$12.00	
Hepplewhite, Roller Bearing, Silver Plated, \$12.00	
Sheraton, Roller Bearing, N'hel, \$12.00	
Ye Mission, Roller Bearing, Uridized Coppered, \$12.00	
Transparent, Roller Bearing, Plate Glass top, Nickel, \$12.00	
National Queen, Roller Bearing, Fancy Veneers, \$12.00	
Loyal, Roller Bearing, Veneers, \$12.00	
Nickel, \$12.00	
Triple Medal, \$12.00	
Marion, Roller Bearing, N'hel, \$12.00	
Marion Queen, Roller Bearing, Nickel, \$12.00	
Monarch, Roller Bearing, N'hel, \$12.00	
Monarch, Roller Bearing, Jap, \$12.00	
Perpetual, Regular B'r's, N'hel, \$12.00	
Monarch Extra (17 in. case), Roller Bearing, Nickel, \$12.00	
Monarch Extra (17 in. case), Roller Bearing, Japanned, \$12.00	
Auditorium (26 in. case), Roller Bearing, Nickel, \$12.00	
Mammoth (30 in. case), Roller Bearing, Nickel, \$12.00	
NOTE—Rebates: \$10 per dozen on three-dozen lots; \$1 per dozen on five-dozen lots; \$2 per dozen on ten-dozen lots; \$3.50 per dozen on twenty-five-dozen lots.	
Strator Metal Stamping Co.	
Eureka Japan, \$15.00	
Model A, Sanitary, \$15.00	
Model A, Sterling, \$15.00	
Model B, Sterling, Nickel, \$15.00	
Model B, Sterling, Japanned, \$15.00	
Model C, Sterling, \$15.00	
Model D, Sterling, \$15.00	
Tacks, Finishing Nails, &c.	
New List, May 1, 1905.	
American Carpet Tacks.	
American Cut Tacks, \$1.00	
Suedes Cut Tacks, \$1.00	
Suedes Upholsterers', \$1.00	
Gimp Tacks, \$1.00	
Lace Tacks, \$1.00	
Trimmers' Tacks, \$1.00	
Looking Glass Tacks, \$1.00	
Bill Posters' and Railroad Tacks, \$1.00	
Hungarian Nails, \$1.00	
Finishing Nails, \$1.00	
Trunk and Clout Nails, \$1.00	
NOTE—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10% is given on Light weights.	
Miscellaneous—	
Double Pointed Tacks, \$1.00	
See also Nails, Wire.	
Tanks, Oil—	
Emerald, R. M. Co., \$1.00	
Emerald, R. M. Co., \$1.00	
Queen City, R. M. Co., \$1.00	
Queen City, R. M. Co., \$1.00	
Tapes, Measuring—	
American Annes' Skin, \$1.00	
Patent Leather, \$1.00	
Steel, \$1.00	
Chesterman's, \$1.00	
Keuffel & Esser Co., \$1.00	
Favorite, Am Skin, \$1.00	
Favorite, Duck and Leather, \$1.00	
Metallic and Steel, lower list, \$1.00	
3545%; Pocket, \$1.00	

Lufkin's:	
Ames' Skin, \$1.00	
Metallic, \$1.00	
Patent Bend, Leather, \$1.00	
Pocket, \$1.00	
Steel, \$1.00	
Wiebusch & Hilger:	
Chesterman's Metallic, No. 34L, etc., \$1.00	
Chesterman's Steel, No. 108L, etc., \$1.00	
Teeth, Harrow—	
Steel Harrow Teeth, plain or headed, 1/2-inch and larger, per 100 lbs., \$2.75	
Thermometers—	
Tin Case, \$1.00	
Ties, Bale—Steel Wire—	
Single Loop, \$1.00	
Monitor, Cross Head, \$1.00	
Brick Tiles—	
Niagara Brick Tiles, \$1.00	
Tinners' Shears, &c.—	
See Shears, Tinners', &c.	
Tinware—	
Stamped, Japanned and Pieced, sold very generally at net prices.	
Tire Benders, Upsetters, &c.	
Tools—Coopers'—	
L. & I. J. White, \$1.00	
Hay—	
Myers' Hay Tools, \$1.00	
Stowell's Hay Carriers, \$1.00	
Forks, \$1.00	
Miniature—	
Smith & Hemenway Co.'s, Davidson, \$1.00	
Saw—	
Atkins' Cross Cut Saw Tools, \$1.00	
Simonds' Improved, \$1.00	
Simonds' Crescent, \$1.00	
Ship—	
L. & I. J. White, \$1.00	
Transom Lifters—	
See Lifters, Transom.	
Traps—Fly—	
Balloon, Globe or Acme, doz., \$1.15	
Harper, Champion or Paragon, doz., \$1.15	
Game—	
Imitation Oneida, \$1.00	
Newhouse, \$1.00	
Hawley & Norton, \$1.00	
Victor, \$1.00	
Oneida Community Jump, \$1.00	
Mouse and Rat—	
Mouse, Wood, Choker, doz. holes, \$1.00	
Mouse, Round or Square Wire, doz., \$1.00	
Marty French Rat and Mouse Traps (Genuine):	
No. 1, Rat, each \$1.21; \$1.15 doz.	
No. 3, Rat, \$1.15; case of 50, \$5.75	
No. 3 1/2, Rat, \$1.15; case of 72, \$8.40	
No. 4, Mouse, \$1.15; case of 150, \$17.25	
No. 5, Mouse, \$1.15; case of 150, \$17.25	
Trimmers, Spoke, \$1.00	
Wood's E. I., \$1.00	
Trowels—	
Diston Brick and Pointing, \$1.00	
Diston Plastering, \$1.00	
Diston Standard Brand and Garden Trowels, \$1.00	
Kohler's Steel Garden Trowels, \$1.00	
5 in., \$1.00; 6 in., \$1.00	
Never-Break Steel Garden Trowels, \$1.00	
Rose Brick and Plastering, \$1.00	
Woodrough & McFarlin, Plastering, \$1.00	
Trucks, Warehouse, &c.—	
B. & L. Block Co., \$1.00	
New York Pattern, \$1.00	
Western Pattern, \$1.00	
Handy Trucks, \$1.00	
Grocery, \$1.00	
Daily Store Trucks, Improved Pattern, \$1.00	
McKinney Truck, \$1.00	
Model Store Trucks, \$1.00	
Tubs, Wash—	
Galvanized, per doz., \$1.25	
Galvanized Wash Tubs (R. M. Co.), No. 1, 2, 3, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 150, 180, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, 2500, 2600, 2700, 2800, 2900, 3000, 3100, 3200, 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4000, 4100, 4200, 4300, 4400, 4500, 4600, 4700, 4800, 4900, 5000, 5100, 5200, 5300, 5400, 5500, 5600, 5700, 5800, 5900, 6000, 6100, 6200, 6300, 6400, 6500, 6600, 6700, 6800, 6900, 7000, 7100, 7200, 7300, 7400, 7500, 7600, 7700, 7800, 7900, 8000, 8100, 8200, 8300, 8400, 8500, 8600, 8700, 8800, 8900, 9000, 9100, 9200, 9300, 9400, 9500, 9600, 9700, 9800, 9900, 10000	
Per doz., net \$1.70	
Twine, Miscellaneous—	
Flax Twine:	
No. 9, 1/4 and 1/2-lb. Balls, \$1.00	
No. 12, 1/4 and 1/2-lb. Balls, \$1.00	
No. 18, 1/4 and 1/2-lb. Balls, \$1.00	
No. 24, 1/4 and 1/2-lb. Balls, \$1.00	
No. 36, 1/4 and 1/2-lb. Balls, \$1.00	
Chalk Line, Cotton 1/2-lb. Balls, \$1.00	
Cotton Mops, 6, 9, 12 and 15 lb. to doz., \$1.00	
Cotton Wrapping, 5 Balls to lb., according to quality, \$1.00	
American 2-Ply Hemp, 1/4 and 1/2-lb. Balls, \$1.00	
American 3-Ply Hemp, 1-lb. Balls, \$1.00	
India 2-Ply Hemp, 1/4 and 1/2-lb. Balls, \$1.00	
India 3-Ply Hemp, 1-lb. Balls, \$1.00	
India 3-Ply Hemp, 1 1/2-lb. Balls, \$1.00	
2, 3, 4 and 5-Ply Jute, 1-lb. Balls, \$1.00	
Mason Line, Linen, 1/4-lb. Balls, \$1.00	
No. 26, Mattress, 1/4 and 1/2-lb. Balls, \$1.00	
Wool, 3 to 6 ply, \$1.00	
Vises—	
Solid Box, \$1.00	

Parallel—	
Athol Machine Co., \$1.00	
Simonds' Adjustable, \$1.00	
Standard, \$1.00	
Amateur, \$1.00	
Columbian Hdw. Co., \$1.00	
Emmert Universal, \$1.00	
Pattern Makers' No. 1, \$15.00; No. 2, \$12.50	
Machinist and Tool Makers' No. 1A, \$12.50; No. 6A, \$7.00; No. 6A, \$10.00; No. 10A, \$22.50	
Presto Quick Acting, \$25.00	
Tiger Machinists, \$40.00	
Fisher & Norris Double Saws, \$15.10	
Hollands: \$10.00	
Keystone, \$10.00	
Lewis Tool Co., \$10.00	
Adjustable Jaw, \$10.00	
Monarch, 50%; Solid Jaw, \$10.00	
Massey Vice Co., \$10.00	
Perfect, \$10.00	
Merrill's, \$10.00	
Millers Falls, \$10.00	
Parker's, \$10.00	
Victor, \$10.00	
Vulcan, \$10.00	
Combination Pipe, \$10.00	
Prentiss, \$10.00	
Snediker's X. L., \$10.00	
Stephens, \$10.00	
Saw Filers—	
Diston's D 3 (Clamp and Guide, \$1.00; \$2.00, 30%; Clamps, \$1.00)	
Perfection Saw Clamps, \$1.00	
Reading, \$1.00	
Westworth's Rubber Jaw, Nos. 1, 2 and 3, \$1.00	
Wood Workers—	
Massey Vice Co., \$1.00	
Lightning Grip, 15%; Perfect, \$1.00	
Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00	
Miscellaneous—	
Signal & Keeler Combination Pipe, \$1.00	
Holland's Combination Pipe, \$1.00	
Massey's Quick Action Pipe, \$1.00	
Parker's Combination Pipe, \$1.00	
87 Series, 60%; 187 Series, 60%; No. 870, 40%	
Wads—Price per M.	
B. E., 11 up, \$1.00	
B. E., 9 and 10, \$1.00	
B. E., 8, \$1.00	
B. E., 7, \$1.00	
P. E., 11 up, \$1.00	
P. E., 9 and 10, \$1.00	
P. E., 8, \$1.00	
P. E., 7, \$1.00	
Ely's B. E., 11 and larger, \$1.70	
Ely's P. E., 12 to 20, \$3.00	
Ware, Hollow—	
Cast Iron, Hollow—	
Store Hollow Ware:	
Enameled, \$1.00	
Ground, \$1.00	
Plain or Unglazed, \$1.00	
Country Hollow Ware, per 100 lbs., \$1.00	
White Enameled Ware:	
Maslin Kettles, \$1.00	
Covered Ware:	
Tinned and Turned, \$1.00	
Enameled, \$1.00	
See also Pots, Glue,	
Enameled—	
Agate Nickel Steel Ware, \$1.00	
Iron Clad Ware, \$1.00	
Lava, Enameled, \$1.00	
Never Break Enameled, \$1.00	
Tea Kettles—	
Galvanized Tea Kettles:	
Inch, \$1.00	
Each, \$1.00	
Steel Hollow Ware—	
Avery Spiders and Griddles, \$1.00	
Avery Kettles, \$1.00	
Porcelain, \$1.00	
Never Break Spiders and Griddles, \$1.00	
Never Break Kettles, \$1.00	
Solid Steel Spiders and Griddles, \$1.00	
Solid Steel Kettles, \$1.00	
Warmers, Foot—	
Pike Mfg. Co., Soapstone, \$1.00	
Washboards—	
Solid Zinc, \$1.00	
Crescent, family size, bent frame, \$1.00	
Red Star, family size, stationary protector, \$1.00	
Double Zinc Surface:	
Saginaw Globe, family size, stationary protector, \$1.00	
Cable Cross, family size, stationary protector, \$1.00	
Single Zinc Surface:	
Nalad, family size, open back, perforated, \$1.00	
Saginaw Globe, protector, family size, ventilated back, \$1.00	
Brass King, Single Surface, open back, \$1.00	
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface, \$1.00	
Glass King, Single Surface, open back, \$1.00	
Enamel Surface:	
Enamel King, Single Surface, ventilated back, \$1.00	
Washers—Leather, Axle—	
Solid, \$1.00	
Patent, \$1.00	
Coil, \$1.00	
Size, \$1.00	
Washers, \$1.00	
The above prices are based on \$6.00 off list.	

In lots less than one keg add 1/4¢ per lb.; 5-lb. boxes add 1/4¢ to list.	
Cast Washers— Over 1/2 inch, barrel lots..... per lb. 1 1/4¢ @ 2¢	
Weather Strip— Flexible Felt— Lined, per 100 ft., \$2; \$3; \$4.....40¢-10% Moore's Unlined, per 100 ft., \$3; \$5; \$4.....50¢-10%	
Wedges— Oil Finish.....lb. 2.70 @ 2.80¢	
Weights—Hitching— Cover's Mfg. Co.....40%	
Sash— Per ton, f.o.b. factory: Eastern District.....\$27.50 @ \$28.00 Southern Territory.....\$20.00 @ \$23.00 Western and Central Districts.....\$23.00 @ \$25.00	
Wheels, Well— 8-in., \$1.55; 10-in., \$2.00; 12-in., \$2.50; 14-in., \$3.00.	
Wire and Wire Goods— Bright and Annealed: 6 to 9.....80% 10 to 13.....80¢-2 1/2% 14 to 18.....80¢-7 1/2% 19 to 26.....80¢-2 1/2% 27 to 36.....80¢-2 1/2% Galvanized: 6 to 9.....75¢-5% 10 to 14.....75¢-7 1/2% 15 to 18.....72 1/2¢-10¢-2 1/2% 19 to 26.....75% 27 to 36.....72 1/2% Coppered: 6 to 9.....75¢-5% 10 to 14.....75¢-7 1/2% 15 to 18.....72 1/2¢-10¢-2 1/2% 19 to 26.....75¢-10¢-5% 27 to 36.....75% Tinned: 6 to 14.....75¢-10¢-2 1/2% 15 to 18.....75¢-7 1/2% Annealed, Steel and Tinned, on Spools.....70¢-10¢-10¢-70¢-10¢-10¢-10% Brass and Copper on Spools..... 60¢-5¢ @ 60¢-10¢-5%	
Brass.....Net list. Cooper.....10% Cast Steel Wire.....50% Wire Cloth Line, see Lines. Wire Picture Cord, see Cord.	
Bright Wire Goods— List June 24 '03.....90¢-20¢ @ 90¢-25% Brass Cup Hooks and Brass Screw Hooks.....85¢ @ —% Wire Cloth and Netting— Galvanized Wire Netting..... 80¢-5¢ @ 80¢-10% Painted Screen Cloth, 100 ft., \$1.00 @ 1.10	
Standard Galv. Hardware Grade: Nos. 2, 2 1/2 & 3 Mesh, sq. ft. 3..... Nos. 4 and 5 Mesh, sq. ft. 3.....3 1/2¢ No. 6 Mesh, sq. ft.....3 1/2¢ No. 8 Mesh, sq. ft.....4¢	
Wire, Barb—See Trade Report	
Wrenches— Agricultural.....80¢ @ 80¢-5% Alligator or Crocodile.....70¢-10¢ @ 75% Basin Pattern S Wrenches..... 70¢-5¢ @ 70¢-10% Drop Forged S.....45¢ @ 45¢-5% Acme.....60¢-10% Alligator Pattern, 70%; Bull Dog, 70% Bemis & Co.: Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%. Bemis Pipe.....60¢ Combination Black.....40¢-5% Merrick Pattern.....50% Boardman's.....40% Coe's Genuine Knife Hdl.....40¢-10¢-5¢-5% Coe's Genuine Steel Hdl.....40¢-10¢-5¢-5% Coe's Genuine Key Model.....40¢-10¢-5¢-5% Coe's Genuine Hammer Handle..... 40¢-10¢-5¢-5% Coe's "Mechanics".....40¢-10¢-10¢-5¢-5% Donohue's Engineer.....40¢-10% Eagle.....50¢-10% Elgin Wrenches, # doz.....\$6.25 Elgin Retreading Attachment, only with one die, # doz.....\$6.25 Elgin Extra Dies, # doz.....\$3.00 Elgin Extra Jaws, # doz.....\$1.75 Elgin Monkey Wrench Pipe Jaws, # doz.....\$2.10 Gem Pocket.....3% Hercules.....70% W & B Machinist.....50¢-5% Case lots.....50% W & B Railroad Special.....50% Case lots.....50% Less than case lots.....40¢-10¢-5¢ Solid Handles, P., S. & W.....50¢-5% Stinson.....65% Vulcan Chsln.....50%	
Fruit Jar— Triumph Fruit Jar Wrench, 5 gross lots, # gross, \$7.50; # doz.....\$9.80	
Wringers— Tuttle Roller Press Mop Pull Wringer, each, \$8.00; # doz.....\$18.00	
Wrought Goods— Staples, Hooks, etc., list March 17, '92.....90¢ @ 90¢-10% Yokes, Ox, and Ox Bows— Fort Madison's Farmers' & Freight- ers.....list net	
7 ino— Sheet.....	

